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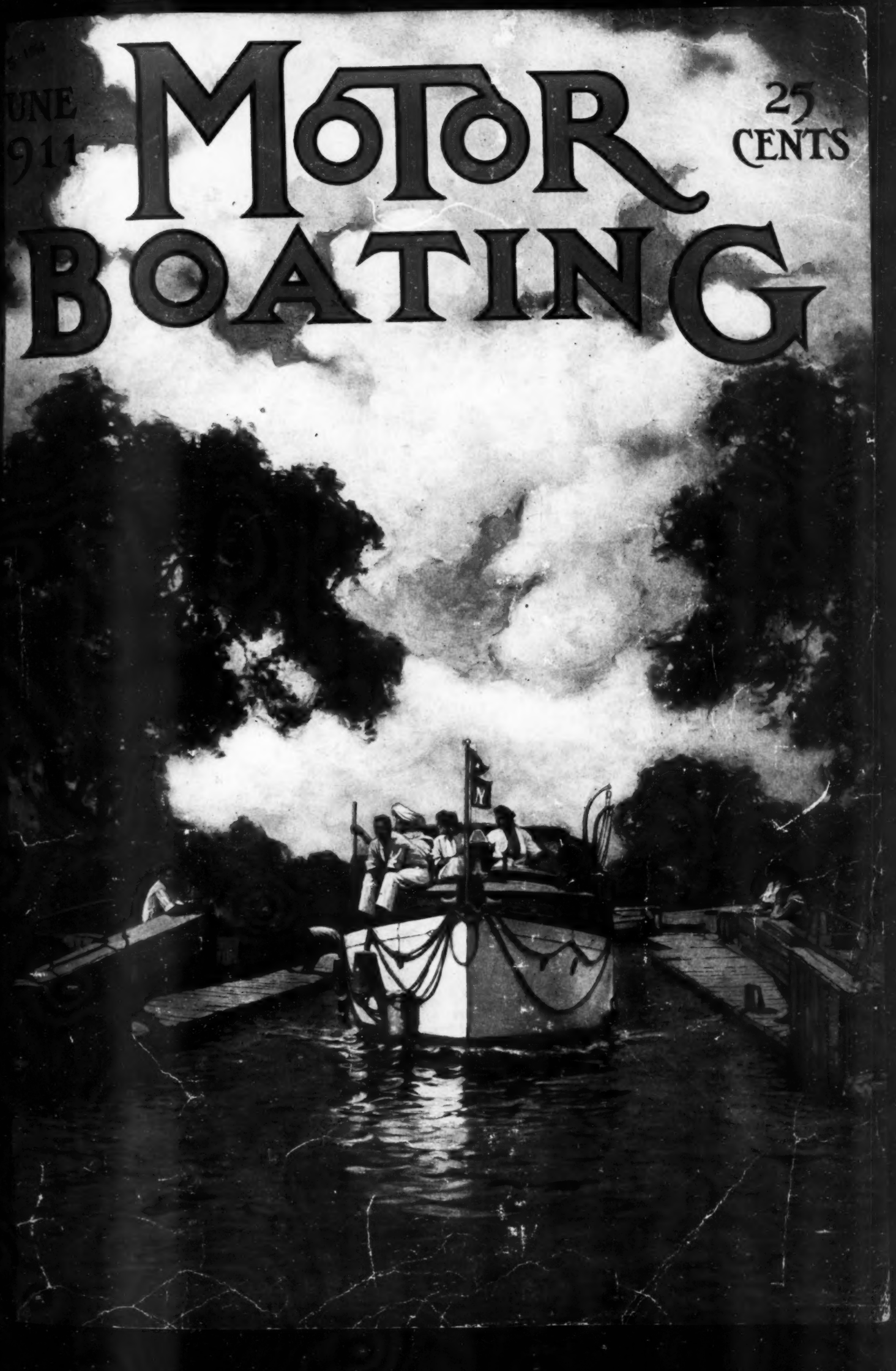

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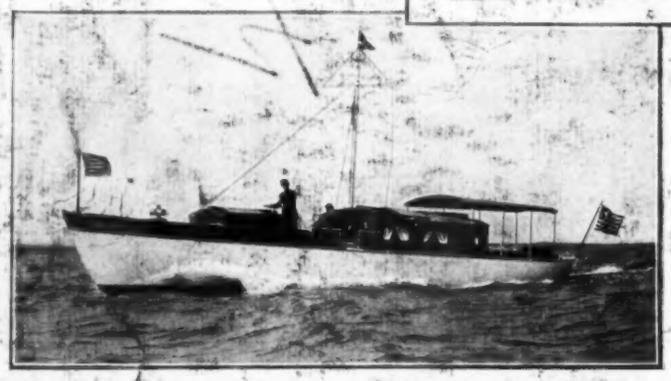

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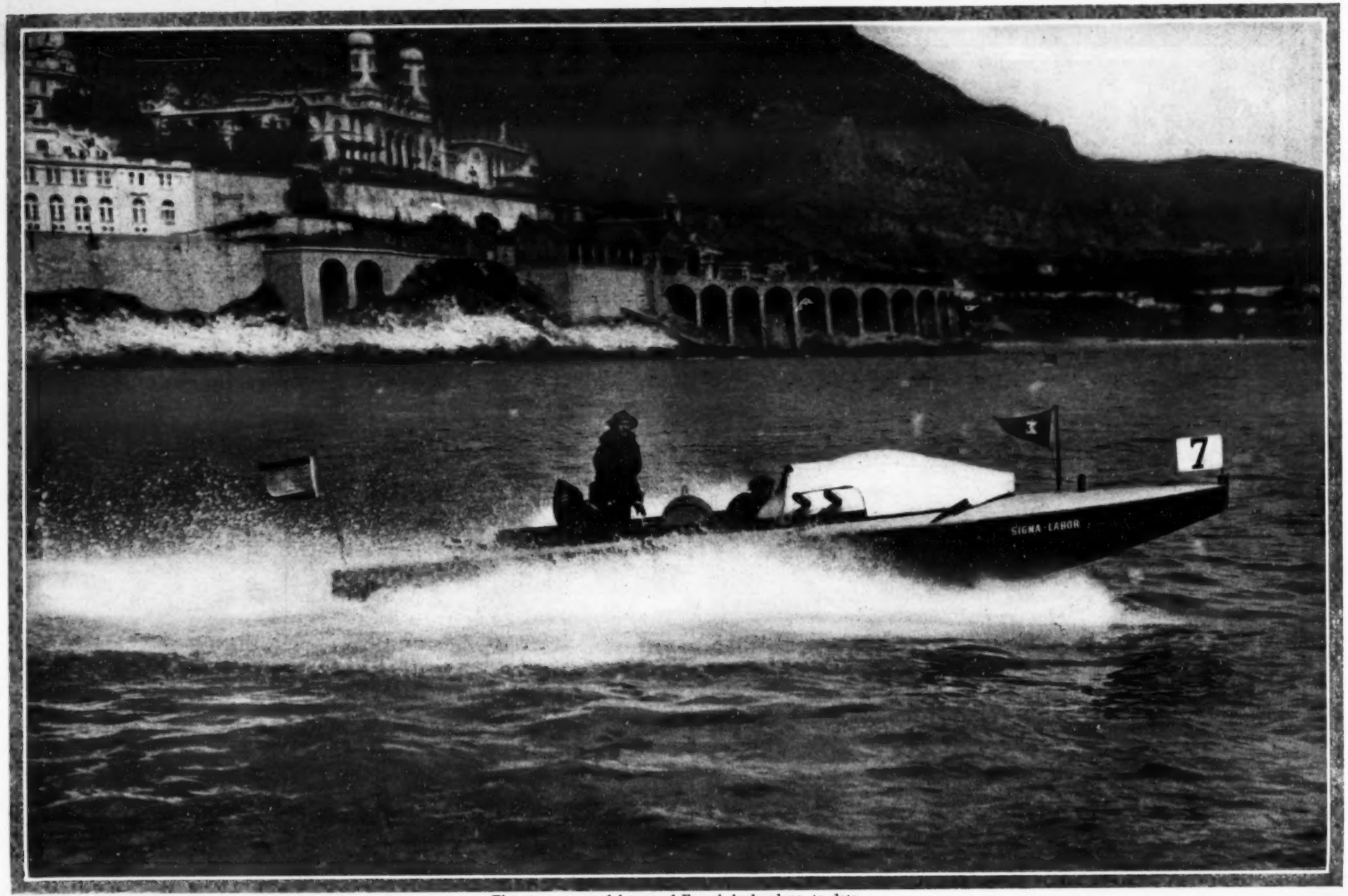


The most successful type of French hydroplane, to date.

Sigma-Labor, formerly Brasier-Despujols, an 8-12 meter hydroplane "cruiser" of the fiddle type, which won the small racer class at Monaco and in the mile and flying kilometer was but a few seconds slower than Uraula with seven times the horse power. This year she was equipped with a light Labor motor of the long stroke, aviation type, developing approximately 100 H. P.

MOTOR BOATING

THE NATIONAL MAGAZINE OF MOTOR BOATING

Activities on the Pacific Coast.

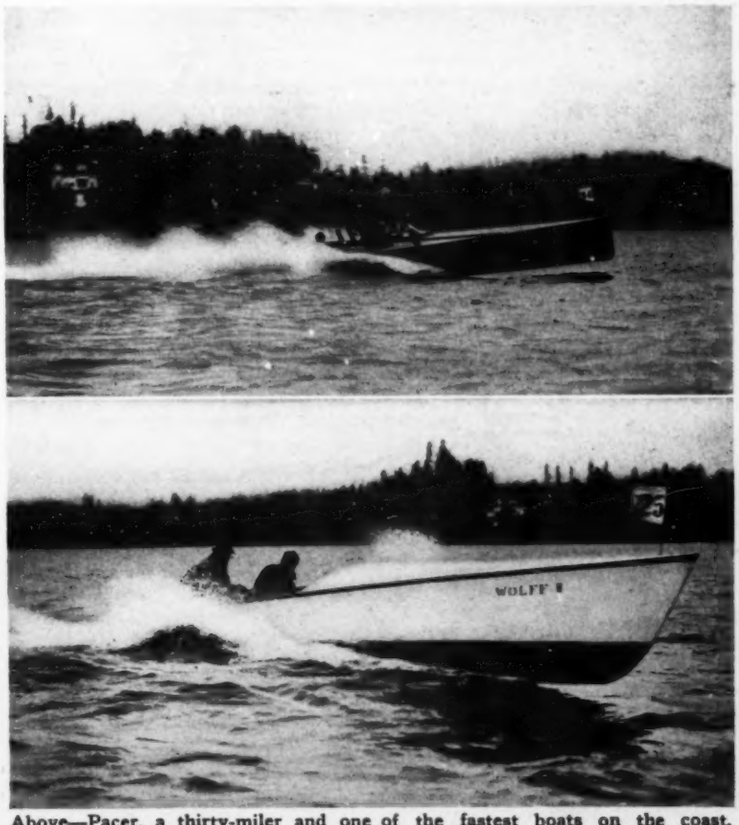
The P. I. P. B. A. and What It Is Accomplishing from Alaska to the Mexican Border. The Big Events That Are Being Planned and the Boats That Will Compete in Them.

By Chester L. Wynn.

A CONSIDERATION of the motor boating spirit as manifested in pre-season form on the Pacific Coast this year can only lead to the conclusion that the young West is getting older—that its ambitions in the power boating way are becoming realizations and that it is going to take the place in the "game" that it rightfully deserves. A review of the coming events makes the reviewer halt before fixing upon any one thing that is forecasted for the season as standing out the most prominent. The clubs have their races scheduled on a larger scale than ever before, they are either building new club houses or remodeling their old ones, they are adding to their membership and they are becoming better organized. In fact all their doings are tending towards a composite whole of advancement.

Standing out most prominently among the activities of the winter months just past including a list of races and regattas on New Year's Day and other holidays was the reorganization of the Pacific International Power Boat Association. The need of a governing body which governs has been felt for some time along the coast and the results of the work done by the Association at its meeting at Portland will be watched with interest. While of course more enthusiasm is shown generally over the coming races the students of the motor boating development will take much interest in seeing and helping the P. I. P. B. A. work out its problems.

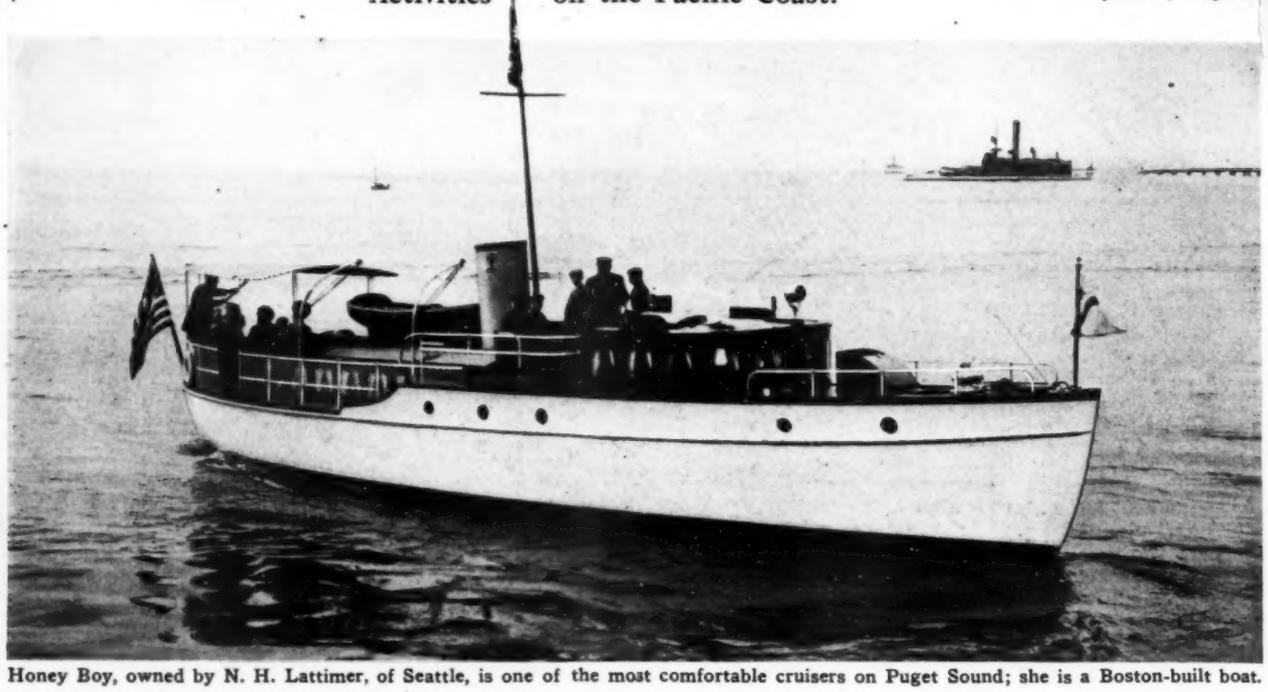
The association was formed originally for the purpose of regulating the long distance racing on Puget Sound, and according to its by-laws was to be "recognized as a sister of the North West International Yacht Racing Association." From September, 1908, when its first articles were adopted, until last winter, the association went along in rather a carefree manner, but then with the infusion of new blood and some especially live members among whom were Edgar Ames, of Seattle; A. V. Comings, of Seattle, and Commodore B. F. Jacobs, of the Tacoma Yacht Club, president, secretary and treasurer of the association, respectively, it took on a new lease of life. A movement was started by which the association would take in the entire Pacific Coast from Alaska to Mexico and would put it on a self-sustaining basis and in direct charge of all cruising and speed boat races on the coast. The last meeting of the association held at Portland was the first time that motor boating men from the entire coast ever gathered together for the betterment of the sport as a whole and this summer the groundwork of the reorganized association will be laid. The broader and more substantial system which it has outlined for the season cannot but serve the functions for which such organizations are intended.



Above—Pacer, a thirty-miler and one of the fastest boats on the coast. Below—Wolff II, last season's champion, owned by Johnny Wolff, who is building a new and faster boat.

Three large events and a number of club races are scheduled at present to be run under the auspices of the P.I.P.B.A.: The long distance cruiser championship of Puget Sound and British Columbia waters which will take place early in July, the cruiser race:

Sigma-Labor, formerly Brasier-Despujols, an 8-12 meter hydroplane "cruiser" of the fiddle type, which won the small racer class at Monaco and in the mile and flying kilometer was but a few seconds slower than Orsini with seven times the horse power. This year she was equipped with a light Labor motor of the long stroke, aviation type, developing approximately 100 H. P.



Honey Boy, owned by N. H. Lattimer, of Seattle, is one of the most comfortable cruisers on Puget Sound; she is a Boston-built boat.

from Alaska to Seattle which is scheduled for August and the displacement speed and free-for-all speed championships of the Pacific coast at Astoria, Ore., in September, will be under the control of the Association.

Before making more detailed mention of the cruiser races and the speed boat events it may be well to list the changes in classification which the P. I. P. B. A. has made effective for all its recognized racers. The load water line length is used as the basis in measuring and rating all the cruisers and a reduction of 10 feet has been made in most of the classes of boats as they existed last year. Under the head of cruising boats the association defines the craft meant as being those used for cruising having raised deck or trunk cabin which must contain sleeping, cooking and general living accommodations for the crew, and the cockpit, if any, must be self-bailing. They are classed as follows: Class A—Over 65 feet. Class B—Over 50 feet and not over 65 feet. Class C—Over 40 feet and not over 50 feet. Class D—Over 30 feet and not over 40 feet. Class E—Under 30 feet.

Boats with cabins and with fixed standing roofs, but not coming up to the cruiser regulations, are classed as follows: Class F—Over 40 feet. Class G—Over 30 and not over 40 feet. Class H—Not over 30 feet. Class HH—Not over 25 feet.

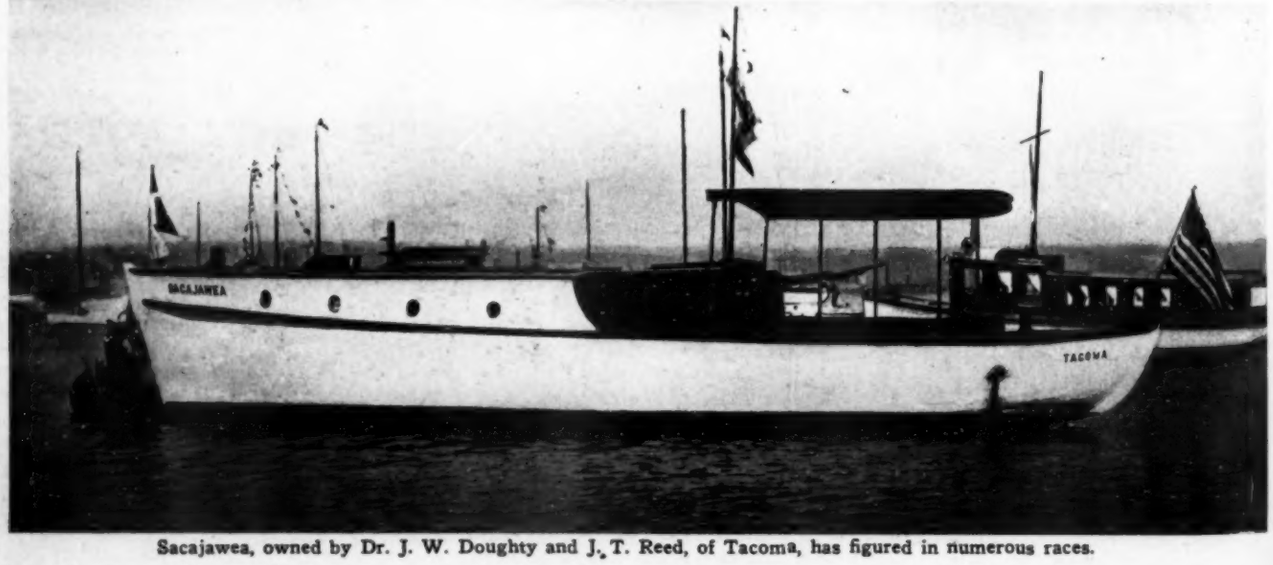
The open displacement boats are classified as follows: Class I—Over 32 feet and not over 40 feet. Class J—Over 26 feet and not over 32 feet. Class K—Over 21 feet and not over 26 feet. Class L—Under 21 feet.

Until this year no attempt has been made by the association to regulate the racing of the speed boats other than by classifying them all as High Speed Boats. This year, however, there will be two classes—displacement speed boats and free-for-all speed boats. These will be given a most thorough trying out in September at Astoria, and are as follows: Displacement speed boats; according to length over all: Class M—12 meters and under. Class N—10 meters and under. Class O—8 meters and under. Class P—Not over 6 meters.

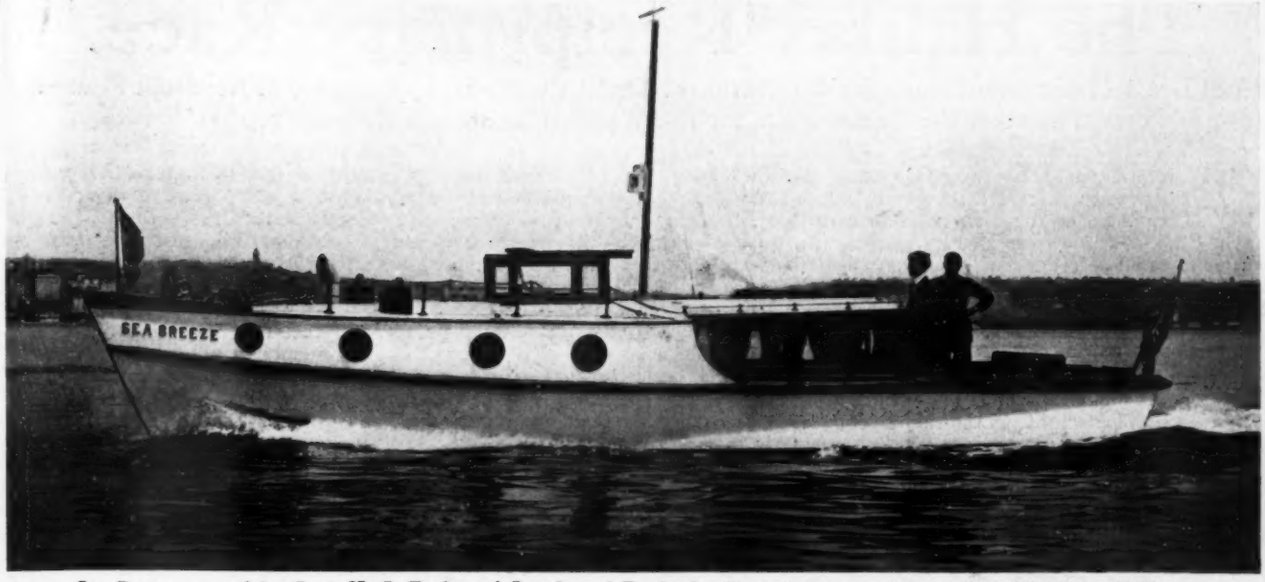
Free-for-all speed boats: Class Q—Over 12 meters. Class R—12 meters and under. Class S—10 meters and under. Class T—8 meters and under. Class U—Not over 6 meters.

As heretofore the time allowance made by the association for cruiser classes will be figured at 80 per cent. of the time allowance in the A. P. B. A. table. In the speed boat classes there is no time allowance schedule and there are no restrictions as to size or power. In view however of the rise of the hydroplane the association has defined the displacement speed boat as "one having a smooth, fair, under-water form, free from planes, steps, hollows, concave bottoms or fins and which does not have other appendages or projections which would have the effect of lifting the boat in the water when under way or which would result in the application of the air cushion principle."

Of the most general interest along the shores of the Pacific this season will be the races and regattas at the mouth of the Columbia river during the Astoria Centennial celebration which begins on August 10 and runs until September 9, with the regatta and the races taking place during the last five days. From



Sacajawea, owned by Dr. J. W. Doughty and J. T. Reed, of Tacoma, has figured in numerous races.



Sea Breeze, owned by Capt. H. C. Taylor, of Seattle and England. Note the observation trunk and hatch amidships.

the plans so far outlined the river events will be most spectacular and will see the greatest number of motor boats gathered together that has ever been noted on the coast. Yacht clubs from Vancouver, B. C., on the north to Southern California have signified their intention of cruising down and up the coast to the celebration, and it is now predicted that some world's records are to be broken in the championship races.

The Astoria celebration is in commemoration of the first settlement of the Northwest by a white man in 1811. In that year the ship Tonquin, a trader owned by John Jacob Astor, sailed into the mouth of the Columbia and proceeded up ten miles to a cove where the crew landed and established a camp to facilitate trading with the Indians. This camp became Astoria and the city is now preparing to celebrate its founding. Nearly $25,000 will be devoted to making up purses for the championship racing events and in entertaining the visiting yachtsmen. The free-for-all Pacific Coast championship has a purse of $3,000 and the displacement race one of $2,500, and the program is one of the most pretentious ever offered west of the Mississippi valley. At some time during the celebration an attempt will be made by the fast speed boats to lower the world's record for the 100-mile distance, and the most interesting races scheduled for the week are as follows:

26-Foot Class—3 heats, 15 miles each; purse, $1,000; first, $700; Second, $200; Third, $100.

32-Foot Class—3 heats, 20 miles each; purse, $2,000; first, $1,000; second, $750; third, $250.

Displacement Championships—3 heats, 30 miles each; purse, $2,500; first, 1,250; second, $750; third, $500.

Free-for-all Championships—3 heats, 30 miles each; purse $3,000; first, $1,650; second, 825; third, $525.

The heats of these larger races will be distributed over three successive days and will intermingle with a large number of races for smaller purses, thus keeping the interest keen from start to finish.

At least four new speed boats are expected to be put in the waters this year from which great things are expected. Wolff II, Seattle Spirit, Pacer II, Happy Heinie, Potato Bug and others have gone near the records in both official and unofficial races, but have never been quite fast enough to draw the eyes of the entire world upon them. What this season will bring forth remains to be seen.

"Johnny" Wolff, whose fame as a boat builder has been established without question by the consistent performances of Wolff II, which now holds the Pacific Coast championship, is building a fast one which will soon be in the water. Wolff is keeping his boat behind locked doors and about the only news that has filtered out about her is that she will have 300 horsepower and will be a displacement craft. She will, however, be constructed in such a manner that planes can be attached if desired.

Rumors come from Sacramento that some of its prominent yachtsmen will have a fast displacement boat ready soon and that they will enter it in the Astoria meets. Some enthusiasts of Astoria are building another with which they expect to enliven the races to be held at their city. At Vancouver, B. C., Victor Spencer has a speedy craft in Comet, but there are

(*Continued on page 52*)

Sans Souci II, owned by Ferdinand Schmidt of Seattle, was third in the long distance race from Seattle to Victoria, being beaten by Soya and Xenial.

The Halifax Reciprocity Race.

Final Draft of the Conditions for the National Yacht Club's Long Distance Motor Boat Contest. The 600-Mile Ocean Race for the William Randolph Hearst Trophy.

UPON going to press the entry blanks for the Halifax Reciprocity Race are being sent out by the Regatta Committee of the National (formerly the Brooklyn) Yacht Club, and Chairman Bentley predicts a number of new entries in addition to the provisional ones mentioned in the last issue. Preparations are being made by the Committee to ensure for the race the degree of success that it deserves by virtue of its splendid course and liberal conditions.

As many of the conditions as had been decided upon at that time were discussed in the last issue of MoToR BoatinG, but since then the final draft has been given us, and we are printing it herewith. The lack of unnecessary restrictions is to be commended, and we believe will make for the success of the race.

The conditions are as follows:

Date.—On July twenty-second, The National Yacht Club will start the "Halifax Reciprocity Race" for boats propelled by any form of combustion engines.

Start.—The start will be from off the National Yacht Club (foot of Twenty-second Avenue, Bensonhurst, N. Y.) between the Regatta Committee Boat anchored about one-half mile W.N.W. of the westerly end of the Club Pier, and a stake-boat to be anchored about 100 yards W.N.W. of the Committee Boat.

Course.—The course will be from the starting line to and around Norton's Point; thence to and around Ambrose Channel Light Ship (leaving it to port); thence to the finish line, hereinafter described. (After passing Ambrose Channel Light Ship, boats may select their own courses, excepting that they are forbidden to pass through Long Island Sound.)

Classes.—If eight or more boats start, there will be two classes. The first, for boats measuring between sixty and eighty feet, over-all measurement, and second, between forty and sixty feet, over-all measurement. If less than eight boats start, all will race in one class.

Eligibility.—All boats owned by members of recognized yacht clubs, which are substantially built and comply with these conditions, will be eligible to start.

Inspection.—All boats must be inspected and approved by the Regatta Committee, or they will not be allowed to start. All boats entered must be anchored off the Club House by eleven o'clock the day before the race is to start, for inspection.

Fuel.—Boats will be allowed to carry gasoline in tanks or cans, provided these are securely fastened, so as to stand rough weather; such cans or tanks must be fastened to the satisfaction of the committee. No ingredient may be used to increase the power of fuel.

Sails.—Boats will be allowed to carry sails at will. The sail area must not, however, be greater in square feet than the square of the over-all length divided by eight, as a constant.

Entries.—Entries will be received, on cards, which will be furnished by the Committee, up to July 17, 1911, at twelve o'clock noon. The Committee reserves the right to refuse any entry for any cause which may seem to it sufficient.

Measurement.—All entrants must report to William Gardner, the National Yacht Club's measurer, on July 19, 1911, at 9 A. M., at Marine Basin, foot of Hubbard Street, Ulmer Park (one-half mile south of Club House), for measurement. A fee of ten dollars will be charged by the measurer, to be paid by the entrant, also the cost of hauling out on the ways, if necessary. At the time of measurement, marks will be placed on the hulls of boats. A final inspection will be made at 8 A. M. on the day of the race, when measurements will be corrected. No weight may be taken out after final inspection.

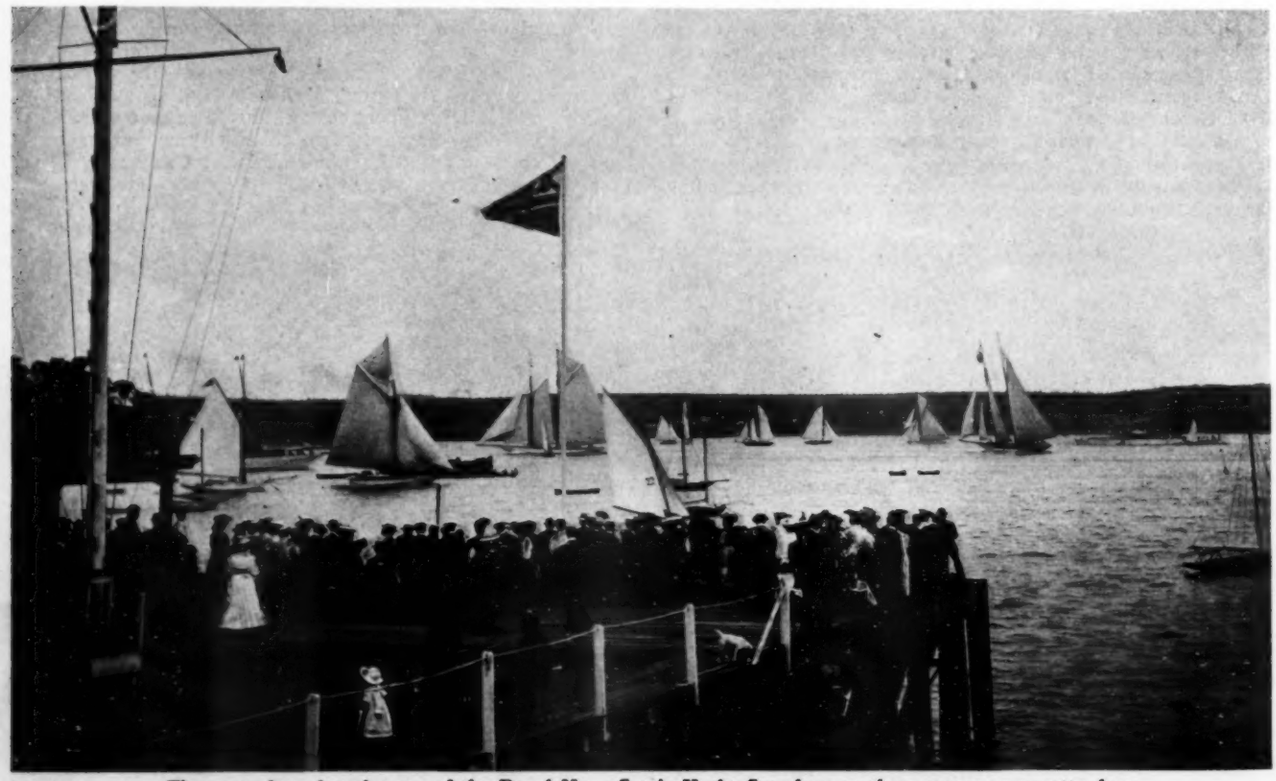
The measurement will be according to the 1911 rules of the American Power Boat Association.

Rations.—Each boat will be required to have on board sufficient rations and water to sustain the crew a period of fifteen days. Such rations and water must be on board at the time of the Committee's inspection.

Crew.—There will be no limit as to number or kind of crew, excepting that there must be an experienced navigator and engineer and two amateurs. The names of all members of crew and addresses must be filed with the Committee by July 21st.

Racing Numbers.—Each entrant will be required to carry, in plain view, on either side of his boat, a racing number which must be at least fifteen inches in height. Numbers for each boat will be assigned to it by the Committee, as soon as entries are received.

Handicaps.—The handicaps will be figured according to the



The grounds and anchorage of the Royal Nova Scotia Yacht Squadron as they appear on regatta days.

rules of the American Power Boat Association, and the rules of that association will govern the race, excepting as herein altered.

Prizes.—The prizes have been donated by Commodore William Randolph Hearst. In each class there will be a first prize, consisting of a trophy costing one thousand dollars, and one thousand dollars in cash. If four or more boats start, there will be a second prize, consisting of a trophy of the value of five hundred dollars, and five hundred dollars in cash. If six or more boats start, there will be a third prize, consisting of a trophy of the value of three hundred dollars and three hundred dollars in cash. If eight or more boats start, there will be a fourth prize, consisting of a trophy of the value of two hundred dollars and two hundred dollars in cash. Each boat finishing the course, whether it wins one of the prizes offered, or not, will be presented with a prize for having finished the course.

Regarding Start.—Attention will be called to each signal by a gun or whistle. Each signal will be hoisted in stops, broken out at the correct moment, and will be lowered thirty seconds before the time for the succeeding signal.

4.00 P. M., White Cone—Warning signal.
4.05 " " Blue Peter Cone—Preparatory signal.
4.10 " " One Red Cylinder—Start for larger class.
4.15 " " One White Cylinder—Start for smaller class.

If there is but one class, the start will be at 4.10 P. M.

Finish.—Each boat must make known its name and the time of its finish, immediately upon crossing the finish line, by notifying the Committee Boat anchored at the northeasterly end of the finish line. The finish line, with all information so as to find the same during daylight or darkness, will be furnished to each boat prior to the start. The finish will be in front of the Royal Nova Scotia Yacht Squadron House, and such signals will be displayed as will clearly indicate either end of the line to the boats finishing.

Protests.—Protests must be filed with the Committee, in writing, specifying fully the matter complained of, within seven days from the time the last boat finishes. Protests as to measurement must be filed with the Committee by ten o'clock the day before the start.

Entertainment.—The Royal Nova Scotia Yacht Squadron and The Waegwoltic Club of Halifax have offered the privileges of their houses to owners and their guests.

Change of Conditions.—The Committee reserves the right to change or amend any of these conditions. Notice of the change of any of the conditions will be given to all boats entered, at least ten days before the start of the race.

Return Race.—The Royal Nova Scotia Yacht Squadron has offered a prize for a return race. Other prizes will undoubtedly be offered. Particulars of the return race will be issued later.

Replenishing Fuel.—Any boat may, at its option, stop to replenish its store of fuel, but in so doing, no time will be allowed for the making of such stop or stops.

Life Boats.—Each boat must carry a life raft or boat sufficient to salve the whole crew or two boats, or a boat and raft; also a ring buoy or life jacket for each member of the crew; a full set of nautical instruments, a spare compass and fire extinguishers. All boats must also be equipped with the various articles prescribed by the United States Government.

The committee earnestly requests entries to be made as early as possible, so that it may make the necessary arrangements for the race.

NATIONAL YACHT CLUB REGATTA COMMITTEE.
PETER BENTLEY, Chairman.
HARVEY B. GRIFFIN.
DANIEL TOFFEY.

A Plea for Rational Design.

A Talk to Owners and Prospective Owners of Motor Craft on the Subject of Motor Yacht Design. Requirements That Should Be Borne in Mind and the Impracticability of Some Popular Features.

By Allen D. Woods.

FROM experience with both yachts and commercial vessels, the writer finds that there are many requisites obtaining in vessels built solely for commercial purposes which would, if incorporated into the design of pleasure boats, be for the general benefit of the pastime of motor yachting, and this article is written with the hope that the few thoughts expressed may lead yachtsmen generally to study carefully their own actual requirements and to secure boats which shall fit these requirements and shall be a constant source of enjoyment to own, to operate and to look at.

A motor boat as thought of by most readers of MOTOR BOATING, comes within the definition of a yacht, and its efficiency as such is measured by the amount of pleasure it gives the owner in return for its cost and the time and money he expends for its use and maintenance. Efficiency is not merely a word in the dictionary or a matter for discussion in technical circles—it is a matter of every-day interest to the owner of a yacht of any sort, for no boat or engine can be built and run without possessing it to a greater or less degree, and it should be the owner's aim to have his yacht attain the highest degree of efficiency consistent with his needs.

High efficiency means to him that his yacht always meets the demands he makes upon it, whether to safely encounter rough water or to develop and maintain a high rate of speed, depending upon the type of yacht, and does the work required with all possible comfort to him and without distress or damage to hull or machinery. On the other hand, low efficiency means that his boat is often in need of repair, or labors through rough water with much discomfort to himself, and generally is not to be depended upon.

Between these extremes are many degrees. And there are also degrees of efficiency in the arrangement of living quarters or passenger accommodations, irrespective of the size of the boat. A small yacht, if properly arranged, may be more comfortable for its passengers than one of twice the size will be, if not so well laid out.

To get good efficiency in a yacht to be built to fulfil a given set of requirements constitutes the work of a yacht designer. Many people think that a "design" consists merely of the plans shown on paper, but these plans are only the visible result of much thought, weighing of conflicting conditions, judgment, and calculation, and a good design may be had only by such a process.

* * *

THE vital requirements of a yacht, from the owner's standpoint are: 1, Safety; 2, Strength, 3, Comfort—in the order named. Hand in hand with these qualities should go style, or smart appearance. Then come the requirements of, 4, Speed; 5, Cost to build, and 6, Cost to operate. Different values are given to each of the foregoing factors in nearly every case, and it is the harmonious assembling of these values that produces a highly efficient yacht to meet the owner's needs.

But when a man buys his first boat, unless he seeks competent advice, he too often makes speed and low first cost the prime requirements. Let us suppose that he wishes to buy a small launch for day use and has before him two propositions for boats of the same length—one a boat with good beam and freeboard, strongly built, with a suitable engine, fairly heavy and capable of driving the launch at 7 miles per hour; the other, a more lightly constructed boat without much freeboard, and equipped with a light high speed engine which will drive the boat at 8½ miles per hour. If the second boat can be bought for the same money, or less, it seems to him to offer the most value. But does it? Going back to our list of vital requirements, the lesser beam means lessened stability (with boats of similar form) and the lesser freeboard reduces the ability to safely meet rough weather, both of which conditions reduce the owner's confidence in his boat. The cheap, light, high-speed engine does not as a rule have the lasting qualities of a heavier engine turning more slowly, and will use more fuel and oil. In a run of twenty miles, the difference in time taken would be only thirty minutes in smooth water. In rough water the less able boat could not go at full speed and would be slowed down to about the same speed as the other. And there would be a great difference in the two boats in rough water, as to comfort and peace of mind of the occupants.

To sum up, every advantage is with the larger, slower boat, except in the one point of speed under ideal conditions of weather. In some cases, the buyer of the small, cheap boat has become so alarmed and dissatisfied with his venture that he

gives up the sport, not understanding that his disappointing experience is not the fault of the pastime, but of his inadequate equipment. Proper consideration of all requirements would result in small boats of more healthy type, which would be more satisfactory to the general class of owners. Such boats can be had, and they are most in evidence where the water conditions prohibit the use of less able boats.

* * *

LEAVING the subject of small launches, and considering motor yachts in general, speed, except in racing boats pure and simple, should be a secondary consideraion. Even in the fast ferry launches (so-called) it does not take precedence over general ability and comfortable accommodations for the owner. Every launch has for its model and length, a speed called the "limiting economical speed," up to which point an addition of power gives a reasonable addition in speed, but beyond which, added speed requires a wholly disproportionate addition of power, and as power costs money, the additional speed is produced at a proportionately excessive cost. Use as low speed as you can be content with, remembering that a half knot an hour more speed means a very few minutes difference in a couple of hours' run. To investigate the true cost of speed, include with the original cost of the boat, the cost of running it and repairing it for two years (or as long as you expect to keep it), and compare this with similar calculations for other speeds.

Reliability is a quality more essential than speed. A ten-knot boat running all the time covers the same distance and gives more satisfaction than a twenty-knot boat laid up half the time for repairs. For the average owner, high speed is of no great value. The author has no particular objection to high speed cruising launches, but feels that the money spent in attaining and maintaining this speed, would, if spent in providing for more reliabality and durability, give more satisfaction. There is no reason why a yachtsman should put up with inconvenience due to breakdowns and renewals, unless he considers it a part of the sport of yachting.

The question of durability should have great consideration when buying or building a boat. Strong construction reduces cost of upkeep, and insures a better price when selling the boat. Attention should be given to parts subject to wear, as steering gear, shafts and struts, rudder bearings, stern bearings, etc. Wear is not sufficiently anticipated in most yachts. Bearing surfaces should be large, and proper means of lubrication should be provided and *used*. Shaft and strut bearings in poor condition mean that power is absorbed in friction and vibration, which should be used for propulsion. Failure of steering gear at a critical moment may bring disaster. Proper provision is made to reduce wear, in commercial vessels—it is equally necessary on yachts, and will be made, if the owner insists.

* * *

MUCH can be said of interest to the owner of a yacht on the subject of its style or appearance. The old saying, "Handsome is that handsome does," may perhaps apply to a yacht, and if she does not leak or ship water and the engine keeps going she may seem to the owner the handsomest craft afloat, but that is only the pride of ownership, and does not signify that her appearance would be favorably passed upon by a committee of old salts. For there have been developed, in the course of centuries of shipbuilding, certain standards by which the appearance of a vessel may be judged, to ascertain whether she has any claims to the description "a handsome vessel."

Those accustomed to seeing shipshape seagoing vessels, often have their taste sufficiently trained to be able to judge by the eye. But back of good taste, in this as in other matters, are sound principles, some of which we might well consider. The "style" of a yacht is a part of her being, is built into her construction, and no amount of polished brass or varnished mahogany can compensate for lack of it. A smart appearing boat is not necessarily an expensive one. Some canoes, built by untutored natives, have more style than many boats built by civilized man, and some tug boats have more style than some passenger vessels.

* * *

PROBABLY the first requirement of style is a graceful sheer and deck line, for with these attractions to hold the eye, much else can be forgiven. Breaks in the sheer line are to be avoided if possible, and if they are necessary the broken line should be made as inconspicuous as possible by accentuating some unbroken line, such as a moulding or a gilded cove. Both sheer and deck edge should be "sweet" lines, without flat spots or sudden changes of curvature, and they should harmonize—high freeboard does not go well with excessive flare and flam forward; low freeboard and a sharp deck line forward do not agree. The sheer line should have a certain amount of lift forward to give the impression of buoyancy and life. In fact, if the hull of a yacht gives a strong impression of buoyancy and ability, she is apt to be a fine looking craft, if the effect of the hull is not offset by inappropriate proportions of house, spars, etc., above the deck line.

Good freeboard is necessary for a bouyant effect, but excessive freeboard will give the opposite impression, that the craft is slow and awkward. Another attribute of beauty in a vessel is simplicity. There is a reason and a use for every part of a seagoing vessel, and there are no superfluities. However, what is of use on one kind of vessel may have no value on one for a different service, and while its fitness for the first may be unquestionable, its use on the second would be entirely unjustifiable and utterly out of harmony. For example, the ram bow, which on a battleship or cruiser has its value, is utterly out of place on a torpedo boat or on a yacht, as much so as it would be on a Sound steamer or a ferryboat. And what is more, it would be a waste to apply it to any vessel on which it would not be of use, as it is more difficult to build than a straight stem and is more apt to be damaged. Another feature of warship construction wrongly applied to yachts is the peculiar form of stern used on war vessels and on some merchant vessels, built to conform to requirements of Government for use in time of war. It brings the steering gear below the waterline and so makes it less liable to damage by projectiles, but it has no reason for existence on a yacht.

* * *

ANOTHER once popular feature of larger steam yachts which is gradually falling into disuse is the overhanging square stern, which is being superseded by the more graceful and appropriate elliptical stern. The square stern was originally a valuable feature on sailing ships, which, built of wood and comparatively short in length, needed accommodation aft for passengers, width for attachment of the after rigging and room for working the ship. It was a development of the stern castle of mediæval ships. However, when iron came into use as a shipbuilding material, the square stern was displaced by the elliptical stern, as being easier to build and less liable to damage.

The clipper stem, which in its early form was only a knee to take the gammoning lashing of the bowsprit, and later was an ornamental cutwater, has practically disappeared from use on steam vessels, with the exception of steam yachts, where, when the yacht is large enough so that the curve can take its true value as a projection to support the figurehead, it can be made very graceful, and it may be tolerated for its inherent beauty of form. But where the body of the vessel is carried out to the clipper stem, it loses its distinction and might better be superseded by a plumb stem or whaleboat bow, which would give more speed for the same over-all length and cost.

While on the subject of adaptations from larger vessels to smaller ones, there is a tendency towards a "tramp-steamer type" and certain yachts have been so designated. It would be well to find another name to describe these yachts, for if they were really imitations of tramp steamers, it would be a kindness to forget their origin. One would not care for a passenger automobile modeled after an ice wagon or a coal cart, so why should we select the tramp steamer, which is merely an animated barge, as a model for a yacht? A new name should be found for this type of yacht, which really bears more resemblance to the later revenue cutters, or to the small coasters of the British Isles.

Imitation of a large steamer by reduction is a disappointment in every case, as deck houses, etc., are necessarily changed in proportion to give proper headroom, and their relation to the hull is destroyed. Further, we associate with nearly every type of vessel, a certain actual size, and mere reduction in size of any type, affects one the same as does a child or a tailor's manikin dressed in man's style clothes—it attracts the attention, but does not command the admiration.

* * *

HARMONY of proportions is the true measure of beauty, and is usually attained only by the professional designer, who has studied its development and application to the design of motor yachts. In this connection, it might not be amiss to suggest that the general line of stock launches built by factories not located on salt water, would be improved in speed and appearance, if their builders would go to an experienced designer for plans. The fact that many boats will be built from the one design is of itself a reason why that design should be prepared with the greatest care. The cost of good designs would be slight when divided among a number of boats, and the improved appearance of his launches would oftentimes bring the builder additional orders.

It would not be possible within the limits of a magazine article, to discuss at length the defects that are often met with in motor yachts, but a few may be pointed out at random.

The combination of bow and stern both raking forward is very undesirable, giving the impression that the boat has been knocked out of shape. This is bad enough on an open launch, but the addition of a cabin or flagstaffs exaggerate the defects, by adding lines at other inclinations. This form of stern, whether square, round or pointed in plan, has no beauty of form. When pointed in plan, it is sometimes varied in profile, but in any of these forms is of little better appearance and is difficult to build.

Hardwood for exterior use should be finished in the natural color, without using colored fillers or stain, except mahogany, which can be stained with certain penetrating stains, to good effect. Oak should not be finished antique or in other fancy finishes, as these are not appropriate for boat use and do not refinish well. Joinerwork and finish for a yacht should be selected with the same good taste as for a house, but with even more care, and it should be borne in mind that simple panelling and mouldings will best stand the test of time and frequent refinishings. Small mouldings and carvings are soon filled with varnish and thus lose their character. V-joint staving usually is more appropriate than panelling for small yachts and is cheaper. Alternate strips of dark and light woods are often used for decks and staving, but are not pleasing. You would not have your veranda floor boards painted like an awning.

Elaborate brass rails and scrolls are not desirable—they are not shipshape and are not easy to keep in condition. There are enough necessary brass fittings, as clocks, cleats, deck plates, etc., to give a "yachty" effect, and to give sufficient exercise in polishing, without adding anything unnecessary. A certain amount of time and labor must be spent in keeping a yacht clean—anything beyond the minimum, reduces time available for cruising—in fact, reduces the efficiency of the yacht.

Advantages of the Gasoline Tug.

Wherein It Is Now Proving Itself the Superior of Its Steam-Driven Predecessor. A Comparison of the Relative Costs and Expenses of Running Gasoline and Steam Tug Boats.

By Renwick Z. Dickie.

THE main reason why the motor tug of small power is largely taking the place of the steam tug is that the original investment and cost of operation are much less.

Brother Jonathan, a small gasoline tug.

The original cost is much less, owing to the decreased weight of the motor of the same power in comparison with the steam plant, the average steam plant weighing about 450 lbs. while the motor weighs about 120 lbs. to the horse power. This permits the same amount of power being put in a much smaller hull, with a finer block co-efficient, which is a less expensive hull to construct. The steam plant consisting of a Scotch marine boiler fitted to burn crude oil, and a compound condensing engine, with all necessary auxiliaries, will cost about $100 per horse power installed, while the gasoline plant will cost about $50 per horse power installed. These figures are based on Pacific Coast practice, where most of the commercial gas engines are heavily built with large cylinders and run at a slow speed. This design of engine has been adopted owing to the fuel which is cheapest in this locality, it being slower to ignite, with a more violent "explosion" than gasoline.

The cost of operation of a motor tug will vary in different localities, according to the cost of fuel, the quality of fuel, and the cost of help. On the Pacific Coast, where the engines are mostly operated on low grade distillate it has been found by experience that to operate an engine with a compression high enough to give a fuel consumption of about 1/9 of a gallon per horse power per hour, will be more economical in up-keep than to operate with a higher compression, and a correspondingly lower fuel consumption.

Another advantage which the motor tug has over the steam tug is in the case of intermittent service, where the engine can be started and stopped, when the boat is to be used, thus using no fuel unless in actual service, while the steam tug has to burn a small amount of fuel continually to keep up steam; also some fuel to generate steam from cold water.

The steam tug must necessarily carry a licensed captain and engineer, while the gasoline tug can be operated by one man with an operator's license.

Let us first consider a small boat called the Brother Jonathan, which is in successful service on San Francisco Bay and is doing the work of a 75 horsepower steam tug in a more economical way. Only a few of the most apparent costs and costs of operation will be given in this case, as the difference in favor of the gas tug is obvious. The cost of hull will include the entire outfit as used when in service. See table 1.

The steam tug would be equipped with a compound condensing engine with cylinders 9 in. and 17 in. diameter by 10 in. stroke turning a 48 in. dia. 60 in. pitch propeller 160 revolutions per minute. The boiler would be of the Scotch marine type 7 ft. dia. x 8 ft. 5 in. long with one furnace, fitted to burn crude oil atomized by steam.

She is easily within the control of one man.

Some of the steamboat men of the old school contend that a steam tug will outpull a gas tug of the same rated power, and in most cases this is true, but it is not due to the difference in power, but owing to the revolutions at which the power is delivered, the slower revolutions allowing a more efficient propeller. While the steam tug has a propeller 48 in. in diameter and 60 in. pitch, which it turns 160 revolutions per minute, the gas tug would be equipped with a propeller 48 in. diameter and 48 in. pitch, turning 280 revolutions per minute.

Our second example will be the Pirate, a 52 ft. tow boat with a beam of 13 ft. 6 in. equipped with a four cylinder 125 horse power engine, the hull measuring 15 gross tons, so

Pirate—a 50-foot, one man gasoline tug—towing the 1318-ton bark, Star of India.

Table I. Relative First Costs and Costs of Operation of a Steam and a Gasoline Tug.

	Steam.	Gasoline.
Size of hull	50'x14'x6'6"	42'x12'x5'6"
Cost of hull	$4,500	$2,500
Displacement	36 tons	23 tons
Cost of machinery Installed	$7,500	$3,750
Total cost	$12,000	$6,250
Fuel, crude oil	60 bbl.	Dist. 7c. per gal.

	Steam.	Gasoline.
Fuel used per H. P. hour	0.275 gals	1/9 gal.
Cost of fuel per hour	.306	.584
Cost of help per hour (2 men)	$1.20	(1 man) $0.60
Cost of 1 hour's operation	$1.506	$1.184
Cost of 10 hours' operation	$15.06	$11.84
Cost of 1 month's operation (25 days)	$376.50	$296.00

she can be operated by one man. Her plans will show that she is a skeg boat, this construction being adopted to lessen the cost of planking and ceiling, but it is generally acknowledged not to be as strong as a hollow heeled boat.

She is capable of a speed of 11 miles per hour, her engine developing about 145 horse power. The photograph shows her towing the 1,318 gross ton barque "Star of India," with another 125 horse power gas tug alongside.

This picture will show the possibilities of handling large vessels with small power gasoline tow boats, in calm weather.

Our last example will be a new boat now under construction to be called Panama, which, it is hoped, will be a step nearer the solution of the gas tug problem. This boat is 50 ft. long and 12 ft. 6 in. beam and will be equipped with a 3 cylinder engine delivering about 90 horse power at 280 revolutions per minute.

In describing the construction of a towboat the fact must be borne in mind that *towing for hire* is what is meant, and consequently our boat has graduated from the motor boat class, and has to earn an interest on an investment.

First the item of depreciation comes in. The stern is where trouble begins. The sternpost and rudderpost work loose and the worms get in destroying all chances to keep the boat tight. To obviate this, two knees have been put in, one on top of the keel and one above the shaft log, so everything can be thoroughly fastened. The well straps from the sternpost along the keel to the rudder post complete the connection at the bottom.

At the top both the sternpost and the rudderpost may go through and the sternpost has a stout transom on it. There are some objections to having the quadrant on deck on account of the trouble at the quarter blocks if the steering chain is passed down through the deck at the after-quarter and carried along underneath the deck. Some owners do not object to having the steering gear wire carried along the deck in a pipe where a bulwark is fitted, but it is generally acknowledged that a clear deck is best as there is nothing to trip over.

Where a bulwark, say 18 in. high, is fitted all around the boat, the rudderpost and rudder stock can come through the deck and the quadrant can be fitted under the hawser grating aft. The bulwark has the advantage of keeping articles aboard the boat that are stowed on deck, but makes the boat more difficult to keep clean. To assist in keeping the deck clean, "broomhandle" scuppers are fitted, being lead pipe, 2 in. dia. run straight from the inside of the covering board out to the underside of the guard, so a broom handle can be pushed through them to keep them clean.

In order to have a clear deck and no bulwark the rudderpost and rudder stock are stopped below the deck, and for sea towing a large cast iron stuffing box is fitted on the rudder head; for inside towing the stuffing box is not necessary.

The stern bearing is 14 in. long outside of the sternpost so as to get the water to the wheel. The other 5 in. of the bearing is put on the fore end in the sternpost. In order to cover the stern bearing bolts and give them a good hold, the sternpost is moulded at least 14 in.

In order to steer itself and a tow, the boat's rudderpost and rudder are of the same thickness, or say ¼ in. thicker on the back edge. This detracts from the speed, to be sure, but in a towboat speed is not an object. The rudder stock is 6 in. diam. and is fitted into a piece of 6 in. pipe, and the stuffing box is made to fit the pipe. Generally two pintles 2½ in. diam. are fitted which gives a strong construction.

The stem, another weak point, is in one piece from the top down to the keel and is through bolted for its full length even where there is nothing at the back. This keeps it from splitting at the rabbet.

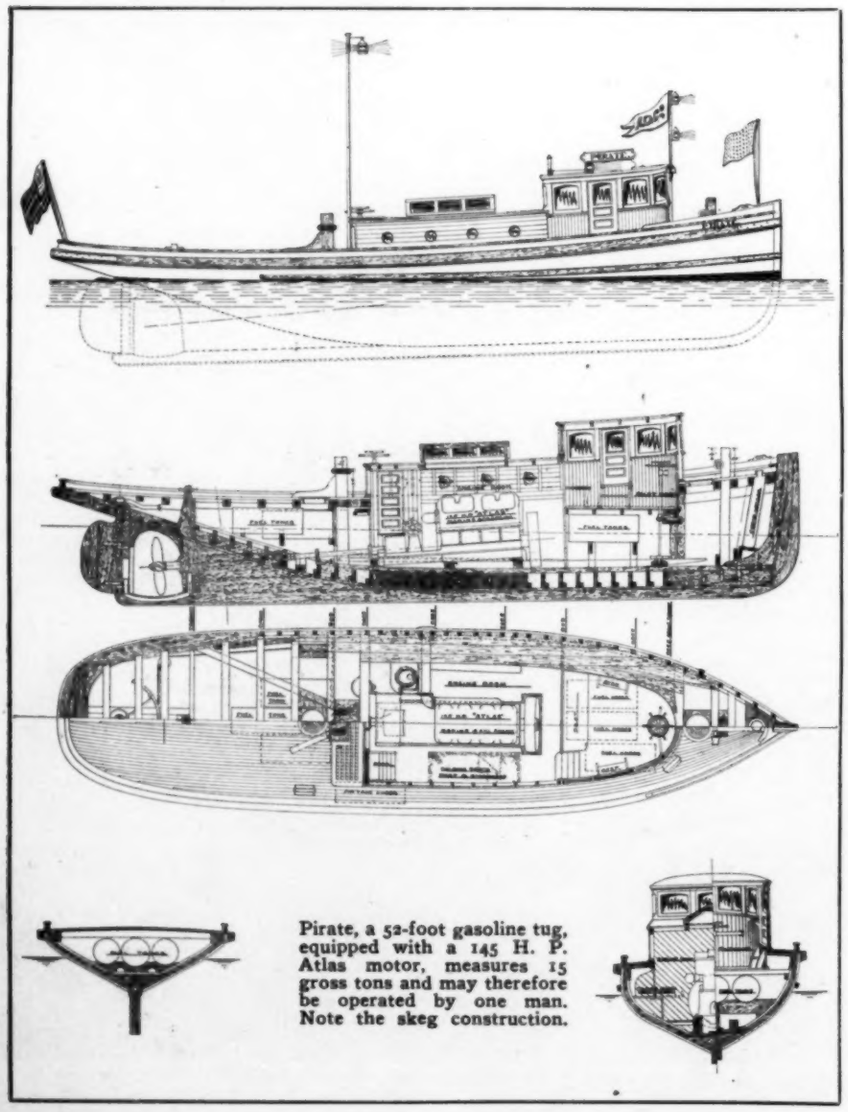
In order to get the propeller well covered it is necessary to make the keel deep, and to get the boat to draw sufficient water the rise of floor should be in keeping. Deep floors give a better connection to the frames, and it takes considerable figuring to arrive at a proper depth.

The following facts govern the depth: The floors should be of proper depth to take 3 clinch bolts in the frame. They should not be so deep as to impress the custom's measurers that the designer is trying to evade the admeasurement law. They should have cross sectional area to conform to Bureau Veritas and the United States Standard Register of Shipping now called the American Bureau. They should not be so deep as to raise the engine too high. They should not be so thin as to be all cut away with the fastening. The depth of the floor having been fixed by the foregoing data, the next item is the keelson. In order to keep the fly-wheel of the engine low enough so as not to have too great a shaft angle, the keelson has been laid on it flat, made thin and thoroughly fastened at the ends.

The guard wears out quickly when the bare ironback facing is left, and if it is covered with iron it dents if the iron is too thin. It also defaces the side of the vessel that is being towed if it is thick.

The secret of good construction is to make everything strong and fasten it thoroughly.

For towing purposes, the following type has been thoroughly demonstrated to be the best: A straight stem, leaning aft on the head about 1½ inches. A fantail stern elliptical in shape with the rudder and propeller well under for



Pirate, a 52-foot gasoline tug, equipped with a 145 H. P. Atlas motor, measures 15 gross tons and may therefore be operated by one man. Note the skeg construction.

Table II. First Cost and Cost of Operation of Steam and Gasoline Tugs of 100 H. P.

	Steam.	Gasoline.
Size of hull	65'x16'x7'	50'x12'6"x6'
Cost of hull	$7,000	$3,500
Horse power	100	100
Weight per horse power	450 lbs.	120 lbs.
Cost of machinery installed	(Oil burning) $10,200	$4,000
Total investment	$17,200	$7,500
Fuel, Water, Etc.		
Fuel burned per day of 10 hrs.	6 bbls. at .60	111.1 gals. at 7c.
Cost of 1 day's fuel	$3.60	$7.77
Cost of 30 days' fuel	$108	$233.10
Cost of water per month	$10.00	$2.50
Cost of cooking coal per month	$5.00	Distillate $5.00
Cost of engine repairs per month	$30.00	$30.00
Cost of boiler repairs per month	$20.00	$00.00
Total per month	$173	$370.60
Crew.		
Captain per month	$125.00	(Operator) $125.00
Engineer	$125.00	$00.00
Total	$250.00	$125.00

protection, and beam sufficient to make the boat stiff enough to take care of herself in case she gets "in irons;" that is, gets the tow line off to one side with a big strain on it.

The sheer is high on the bluff of the bow to keep the boat dry, and the stem is 7 ft. 2 in. or 3 in. to the top of the bow chock with about 30 in. freeboard at the lowest point of the sheer. The stern is low enough to avoid chafing the lines while towing.

The arrangement is as follows: A boatswain's locker forward with a 15 in. galv. iron pipe chain locker in it. Next the engine room, covered with a house, with a large skylight. Sometimes an emergency berth in the engine room which should be used as little as possible.

The hold aft is fitted with shelves for rope and lines of various sorts. The pilot house on deck aft of the engine house is entered from the after end and the engine room is entered from the pilot house. The engine room entrance is fitted with a door so the noise of the engine will not disturb the operator in a fog when he is listening for whistles. The pilot house has a berth for the operator, this being the safest place in the event of an accident.

The windows of the pilot house are ¼ in. and the skylight 5/16 in. French plate glass so as not to be easily broken. Port lights in the side of the engine room have ⅝ in. glass and those in the hull ⅞ in. glass. Hull port lights have a brass tube extending through the hull with a flange on the outside and the portlights on the inside of the hull, so the corner of the barge can not get at the lights to break them.

This arrangement gives a one man boat with one operating gear in the pilot house which steers the boat and handles the engine, and the large boats have a boy for deck hand, who soon becomes an operator himself.

The deck fittings include a cast iron riding bit forward of the capstan on the deck forward of the engine house, a cast iron towing bitt aft of the house and three cleats, two forward on the deck and one in the center aft. The bitts are 9 in. in diam. to save lines, as small bitts soon use up a coil of rope by kinking it too short. Two coils of rope saved will pay for a bitt all in place and fastened.

All fittings are bedded in crude oil or carbolineum avanerious.

The engine should deliver the required power at from 280 to 350 revolutions per minute to make the propeller come right for the draft of water.

It should be installed as described in Lloyds rules and should be fitted with a type like the Model F or L Schebler vaporizer to give the desired elasticity of operation. The air inlets should be piped to a safe place with a pipe 2 in. larger in diam. than the vaporizer.

The following is an approximate cost and cost of operation of a steam and gas tug of one hundred H. P. according to Pacific Coast practice. The cost of hull includes the entire working equipment of the boat as used in service. See table 2.

It will be seen that the first cost of the steam tug would be $17,200 as against $7,500 for the gas tug.

The cost of operation for the gas tug is $395.60 as against $423.00 for the steam tug which does not include interest, depreciation, insurance, management, etc. As some of these items are very doubtful an approximation is given below:

	Steam per month	Gasoline per month
Management	$200.00	$200.00
Depreciation	50.00	50.00
Insurance, 8%	11.46	5.00
Interest, wharfage, taxes, etc., 15%	258.00	112.50
Total	$519.46	$367.50

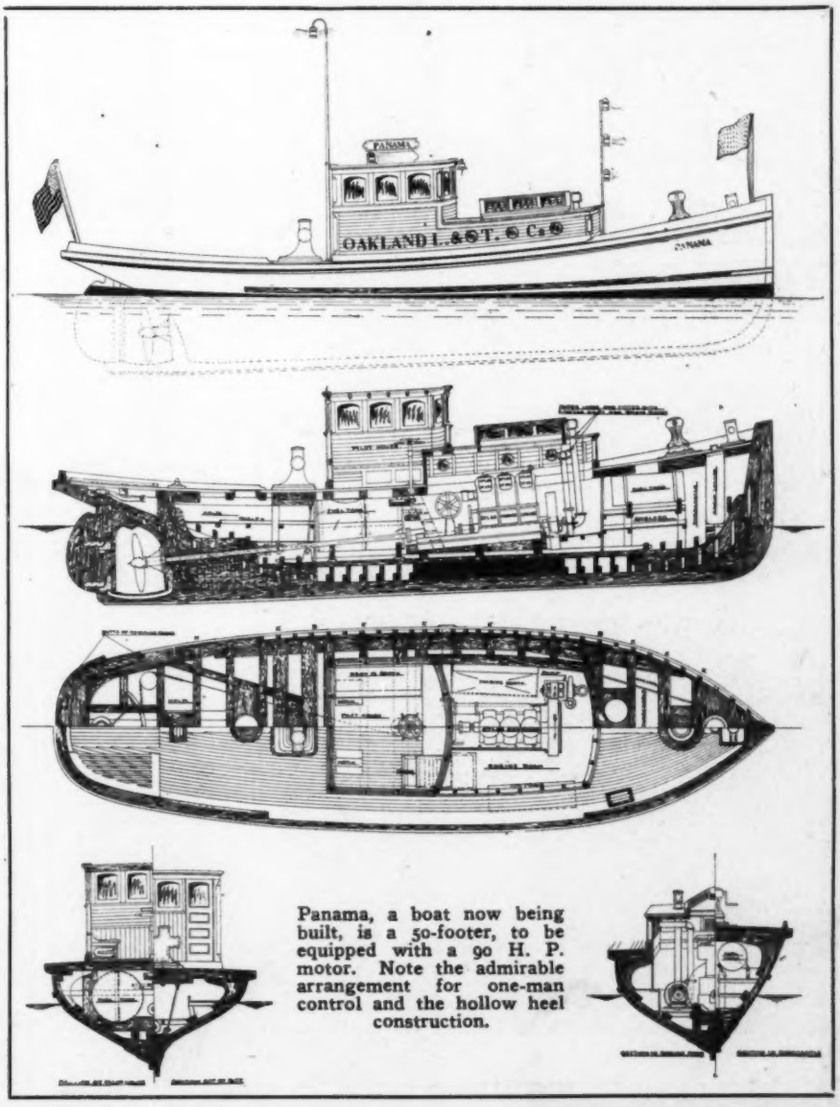
It will be seen that the total charges for operating gas tug are $179.36 less than the steam tug, while the profits will be the same in a month's time.

The profits in the case of the gas tug are to be figured on $7,500 while the same profits of the steam tug are to be figured on an investment of $17,500 or over twice as large.

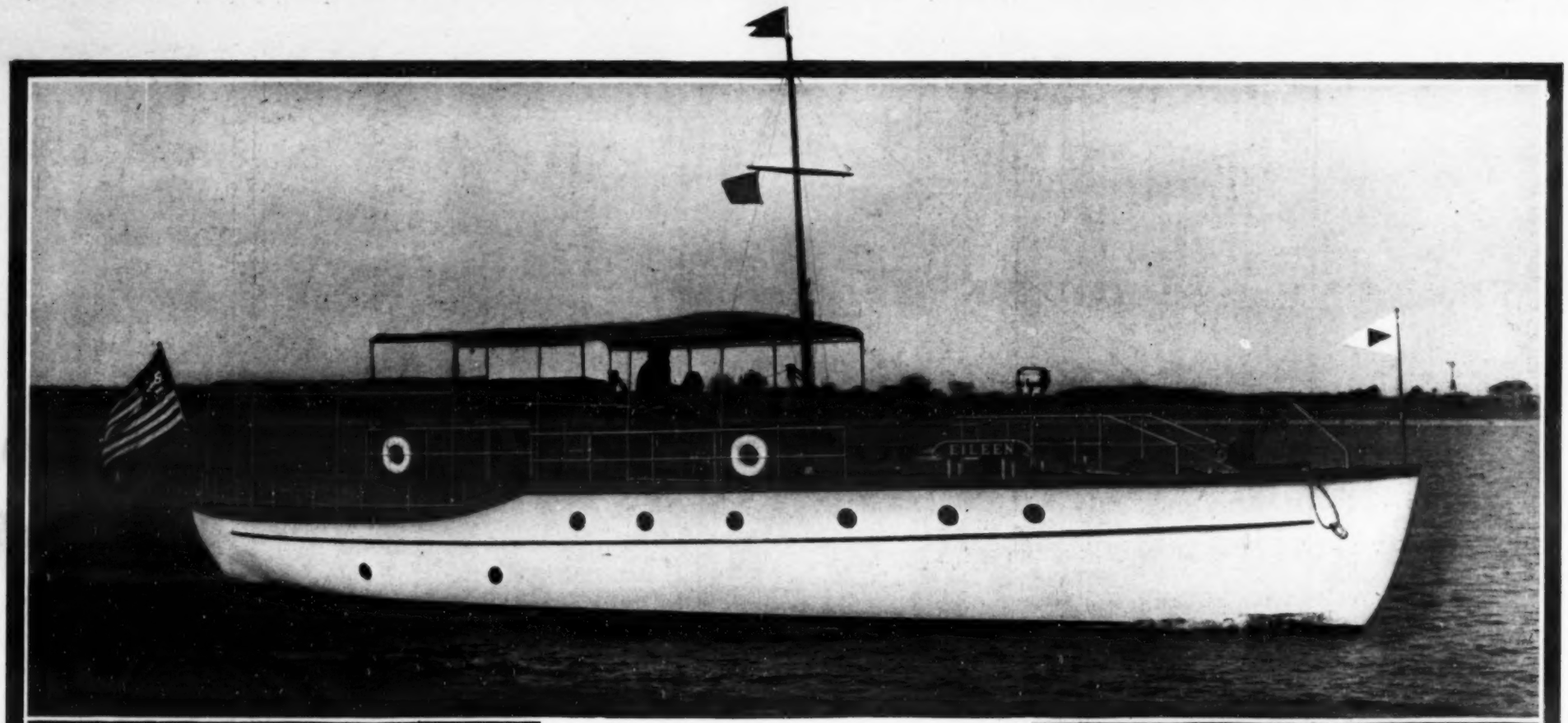
The steam tug in this comparison would be equipped with a compound condensing engine with cylinders 9½ in. and 20 in. diam. by 16 in. stroke turning a 5 ft. 6 in. diam. 6 ft. 6 in. pitch propeller 150 revolutions per minute. The boiler would be of the Scotch marine type 82 in. diam. by 8 ft. 0 in. long with one furnace fitted to burn crude oil atomized by steam. The first cost and cost of operation give the reason for the gasoline tug boat, and in closing we will describe how it is used.

In towing barges the tow boat operates almost entirely on a head line, and when it is necessary to checkway the operator releases his clutch, shortens the towline and backs to one side letting the line come over the snubbing post sometimes put at the after corner of the pilot house.

All of the other operations are the same as an ordinary steam tug with the exception that with one man operating the boat the operations are done quicker and more accurately. And this is the real reason that the gasoline tow boat has attained the success that it has.



Panama, a boat now being built, is a 50-footer, to be equipped with a 90 H. P. motor. Note the admirable arrangement for one-man control and the hollow heel construction.



A well proportioned hull and convenient arrangement above decks mark Eileen as a thoroughly able cruising boat.

Eileen, a Trim 60-Footer.

Length over-all.....60 ft.	Accommodation.....8 persons
Water line length.....52 ft.	Motor.....6-cyl., 40-50 h. p.
Beam.....12 ft.	6 in. x 8 in.....Standard
Draft.....4 ft. 6 in.	Gasoline capacity.....375 gals.
Cabin head room....6 ft. 5 in.	Electrical equipment, Edison storage battery, charged by 1½ k. w. generator.
Framing.....oak	
Planking.....yellow pine	
Decks.....white pine	Cruising speed, 10½ miles per hour.
Interior finish.....mahogany	

The steersman's position is about amidships and is protected by the saloon trunk.

Eileen, a Trim 60-Footer.

EILEEN is a trim 60 ft. raised deck cruiser, built and recently completed by the Greenport Basin & Construction Co. for Mr. Wm. S. Creevey, of Elizabeth, N. J. The lines, lay-out and general plan were prepared by Messrs. Whittlesey & Whittlesey and it was left to the company's designer, Mr. Theo. W. Brigham, the designer of the famous Heather, to make the detail and working drawings.

A glance at the opposite page shows that the raised sides extend to a point a little aft of amidships, from which point the raised deck is carried still farther aft as the roof of the cabin trunk. The boat is controlled from a point about amidships, the binnacle, wheel, etc., being mounted at the after end of the trunk skylight over the saloon. This trunk is also used as a chart table and serves as a protection for the steersman. Just forward of this point is the signal mast and a large mahogany deck box for deck dunnage. Next forward is the engine room skylight, followed in order by the search light, ventilator, ice-box, hatch, bitts and windlass, hatch to forepeak and finally the anchor davit. On the port side opposite the steering position a 12 ft. dingy is carried on davits while the corresponding space on the starboard side is left clear for a passageway.

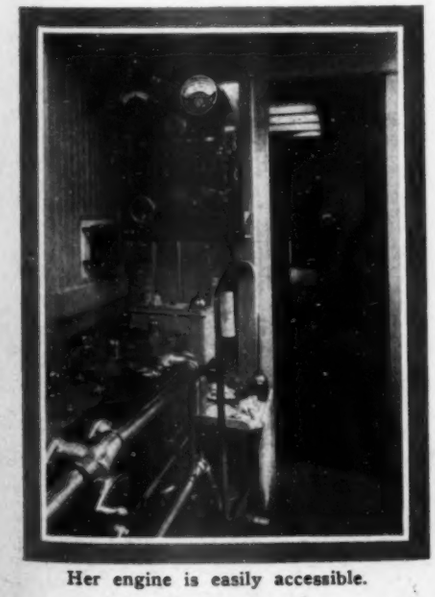
Below deck there is a large saloon amidships, aft of which are a single stateroom, a double stateroom, three large lockers and a toilet room, all amply ventilated by ports, windows and skylights. The main companionway which is aft of amidships on the starboard side leads into the saloon, on each side of which are extension transoms with drawers beneath and lockers, alcoves and shelves above. This compartment is further furnished by a buffet at the forward end and a folding writing desk at the after end. A passageway leads to the after quarters which are finished in white enamel trimmed with mahogany and are very thoroughly equipped throughout.

The engine room and galley are forward of the saloon and are entered both from the saloon and through a hatch on deck. The motor is a 6-cylinder Standard of 6 in. bore and 8 in. stroke rated at 40-50 h. p., and is installed so as to be thoroughly accessible. The motor, situated forward as it is, requires a very long shaft which is thoroughly supported by line bearings, one of which is fitted in the shaft log. The gasoline supply of 375 gallons is carried in a quarter-inch iron tank installed in a watertight compartment aft and connecting with the carbureter by means of two independent seamless copper pipes, one outside the hull and one inside, either of which may be shut off at will.

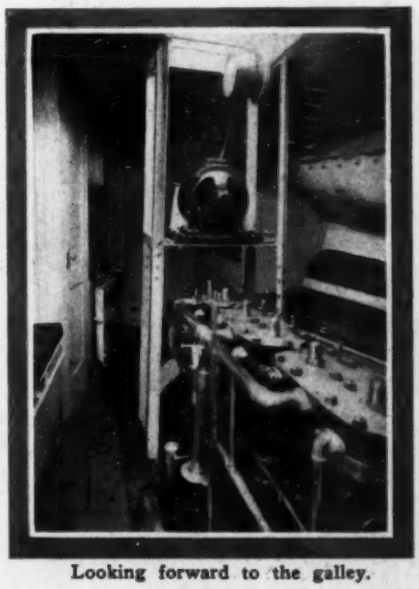
The engine room is provided with two transom lockers and two pipe berths, together with a crew's toilet-room, large locker and galley space forward. Over the stoves, which are the latest alcohol type, are shelves for the oven, broiler, etc., and forward of them a full-width icebox with a capacity of 500 pounds of ice.

The boat is lighted throughout by electricity furnished by Edison storage batteries of the latest type, which are charged by a 1½ K. W. generator shown in the lower right-hand illustration. The switchboard is an elaborate affair for a 60-footer and was furnished by the Smith-Meeker Engineering Co., which company supplied the entire electrical outfit.

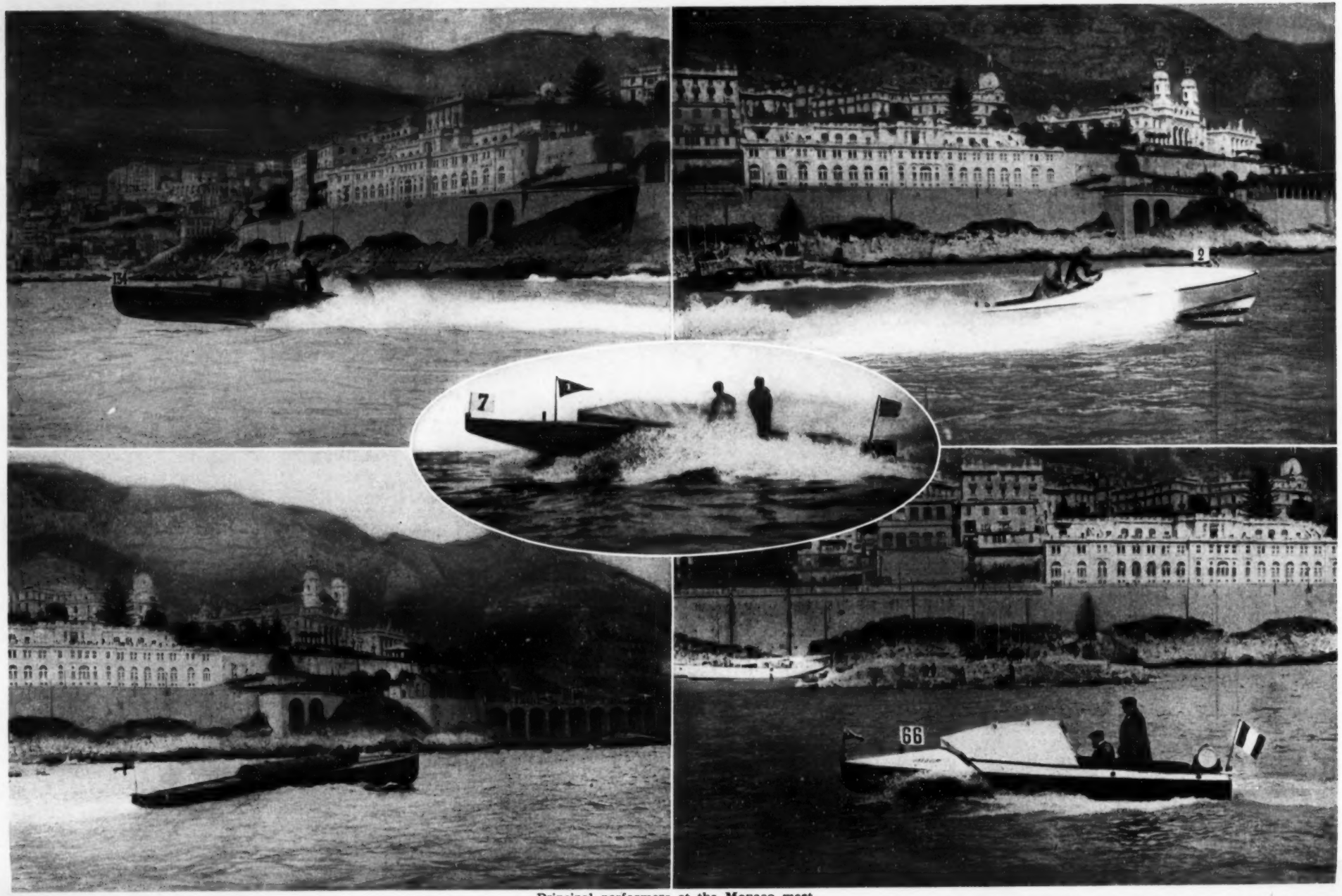
A novel feature of the boat is a bilge manifold in the engine room, whereby one or all of the four watertight compartments can be pumped out by a hand bilge pump or a power pump driven by the engine.



Her engine is easily accessible.



Looking forward to the galley.



Principal performers at the Monaco meet.

Above, on left: Lürssen-Daimler, the German winner of the "Championship of the Sea" and the "Coupe des Nations," besides two races in the 8-12 meter class. On right: Miranda IV, the 26 foot Thornycroft hydroplane that showed up well before being disabled. In centre: Signor Labor, the remarkable French hydroplane "cruiser" that won the "Prix de Monaco" for small racers and nearly equalled Ursula's time in the 5-mile and 5-klm. events. Below: Ursula, winner of the

What Happened at Monaco.

How the "Dope Sheet" Was Upset at the Eighth Annual Motor Boat Meet at Monaco. Remarkable Performances of Lurssen-Daimler and the French Hydroplane, Sigma-Labor.

By Robert Fletcher.

Special Representative of MoToR BoatinG.

THIS year's Coupe des Nations was fertile in surprises. England had hoped to present Ursula, Maple Leaf III and Miranda IV, a formidable team; France counted on the 200 horsepower hydroplane, Clement - Despujols, with Sigma-Labor and Chantecler as runners up; and Germany had a poor chance with Lurssen-Daimler and Pik-As VII. But everything worked out contrary to what had been expected. Maple Leaf had not finished her repairs, Miranda had her bottom stove in, Clement-Despujols had broken her crankcase hangers, and the unfailing Ursula stopped dead after covering half the distance and just as the race seemed in her own hands. In consequence the Coupe des Nations, the most important race of the meeting, and one which should have been won by a 750 horsepower racer, was secured by the German hydroplane cruiser Lurssen-Daimler in 2 hours 1 minute 20 seconds, with the French displacement cruiser Chantecler second in 2:6:12, and the little Hispano-Suiza, with a four cylinder motor of only 2½ inches bore, in third place. Needless to say, last year's record was not beaten.

In the racer section for the nautical mile and the flying kilometre trials, it looked as if Ursula would have a walk over until Sigma-Labor came forward and offered to run as a racer after performing as a cruiser. The Duke of Westminster's boat made the fastest time of the day, covering the nautical mile, standing start, in 1 minute, 35⅗ seconds, and the flying kilometre in 58⅘ seconds, showing an average speed of 35.9 knots for the full distance. Although her horsepower was not more than one hundred, compared with 750 for the English boat, the hydroplane Sigma-Labor made a good showing in the racer section, covering the mile in 1.39⅗, and being only one-fith of a second slower than Ursula in the flying kilometre.

When running as a cruiser Sigma-Labor did not perform so well, her total time being 3 minutes 15⅕ seconds, but this was sufficient to allow her to get home ahead of Lurssen-Daimler. The boats were entirely different in design, yet well matched as regards motors, the two engines being of the same size, but that of the French boat being a very light aviation type, while the German carried a heavy racing automobile motor. The higher speed of Sigma-Labor must be attributed to her more efficient hull, for it is doubtful if her motor was capable of developing the same power as that of Lurssen-Daimler. Third place in the cruiser section was secured by Labor IV, a stepless type of hydroplane, and fourth position by Hispano-Suiza, a simular but very much smaller boat.

Although last year's record was beaten by a respectable margin in the Prix de la Mediterranee, the race was not one of surpassing interest. Out of the dozen 26-footers which started, only three really figured in the race. Of these Labor IV, a stepless type of hydroplane, got a good lead at the start, and although slowing down a little towards the end, had no difficulty in getting home first in 1 hr. 4 min. 32⅘ sec., for the 31 miles, being nearly seven minutes faster than last year. Excelsior XIV, also a stepless hydroplane, came in second five minutes later, with the German hydroplane Pik-As VII in third place, ten minutes later. Since this boat capsized, her pilot appeared afraid to run at high speed.

The Prix de la Cote d'Azur, for 40-foot cruisers having four cylinder motors of 5.1 inches bore, promised well, but finished disappointingly. Keen competition was expected between Lurssen-Daimler, the winner of the Championship of the Sea, Sigma-Labor and Labor V. The German took the lead, his punt-like boat pounding through the water in a manner that made one tremble for its safety and the Mercedes motor roaring in a most healthy manner. The young sportsman Soriano, aboard Sigma-Labor, pushed to the utmost, but although taking the turns very close he lost a few seconds each round to the German. This latter boat was decidedly faster on the straightway, but terribly difficult to get round the buoys; for a time the pilot did his best to get round without slowing down, but later had to cut out the ignition for a few seconds on each turn. Even with this disadvantage Sigma-Labor had been left behind two minutes after seven rounds; then just as second place seemed certain, her motor broke down entirely, Lurssen-Daimler going home a winner in 1 hour 3⅗ seconds, and second place going to Labor V, a Despujols stepless hydroplane, which had been making slow time for the latter half of the race. The motor employed on the Lurssen-Daimler, and which was much more worthy of admiration than the hull, was a Mercedes, built and used for the last Prince Henry road races in Germany. It has its four cylinders cast in pairs, the bore being 5.1 inches and the stroke 8⅗ inches. Valves are in the head, with vertical stems, there being two exhausts per cylinder and one intake. Had a similar motor been mounted in such a hull as that of Sigma-Labor, all comers might have been faced.

The Prix de la Riviera, for the largest type of cruisers, was merely a duel between Chantecler II and La Quise, both fine, handsome seagoing craft, and both fast. Chantecler covered the 31 miles in 1 hour 6 minutes 39 seconds, with La Quise second in 1 hour 10 minutes 21 seconds. This day saw the death of the aerohydroplane Goeland, which, by a miscalculation of distance, was run on the rocks after giving a really convincing exhibition of skimming and flying.

The English racer Miranda IV narrowly escaped a total loss on the ninth day of the meeting. While out at sea she sprung a serious leak astern. Her pilot, Tom Thornycroft, jumped overboard in order to endeavor to close up the leak, which was under the gasoline tanks, but had it not been for the timely arrival of the tender, the boat would doubtless have gone down. The day's racing consisted of a handicap for the Prix de la Condamine, and was won by Labor V, which covered the 15½ miles in 32 minutes 7 seconds. Chantecler second, with Hispano-Suiza third.

Above, on left: Larssen-Daimler, the German winner of the "Championship of the Sea" and the "Coupe des Nations," headed two small racers and nearly equalled Ursula's time in the mile and flying kilometre trials. On right: Miranda IV, the 26 foot Thornycroft hydroplane that showed up well before having a bottom stove in. Principal performers at the Monaco meet.

The Results of the Motor Boat Racing at Monaco.

Elimination "Omnium Race" for Cruisers and Racers.
First in each series to run in final handicap. One round, distance 3.88 land miles.

Boat.	Time.
Hispano-Suiza	10:56 2/5
Gregoire IX	9:24 2/5
Excelsior XIV	17:18 2/5
Lurssen-Daimler	8:46 3/5
Chantecler II	10:13
Maple-Leaf III	17:27 2/5
Labor V	7:47 2/5

Final Handicap "Omnium" Cruisers and Racers.
Distance 2 rounds, 7 7/10 miles.

Gregoire IX	16:07
Hispano-Suiza	20:22
Lurssen-Daimler	14:46
Excelsior XIV	19:20
Chantecler II	17:53
Maple Leaf II.	14:24 1/5
Miranda IV*	Did not finish

*Replaced Labor V.

International Sporting Club Race for cruisers with single cylinder, motor of 3.9 ins. bore, or equivalent. Weight 1433 pounds.
Distance 8 rounds, 31 miles.

Hispano-Suiza	1:42:19 4/5
Excelsior XIV	2:00:20
Edelweiss	4:22:21
Mistral	4:24:25 2/5

Average speed 15.8 knots.

Prix de Monaco, for 49-foot Racers, with 6.1 in. four cylinder motor.
Distance 8 rounds, 31 miles.

Sigma-Labor	1:13:40 2/5
Labor V	1:22:18
Miranda IV	2:29:29

Kanguroo broke down after six rounds.
Average speed 21.9 knots.

Championship of the Sea, Scratch race open to all Cruisers, distance 32 rounds, 124 land miles.

Lurssen-Daimler	4:45:17 2/5
La Quise	5:28:00
Pik-As VII	6:22:28 1/5

Average speed 22.6 knots. 56 starters, only 3 finished.

Prix du Tir aux Pigeons, 31 miles, for Cruisers of 21 feet overall, with motor of 3½ inches bore.

Gregoire IX	1:14:36 2/5
Excelsior-Segnor	1:18:38 1/5
Vedette du Cariad	1:56:47

Average speed 20.5 knots.

Prix de Monte Carlo, 31 miles for Racers of unlimited power.

Ursula	48:57 4/5

Average speed 32.9 knots (walk over).

Prix de la Mediterannee, for cruisers of 20 to 26 feet overall. Motor 4.1 inches bore. Distance 8 rounds, 31 miles.

Labor IV	1:04:32 4/5
Excelsior XIV	1:09:10 1/5
Pik-As VII	1:18:48

Average speed 25.1 knots

Prix de la Cote d'Azur, for cruisers 40 ft. over all. Motor 5.1 ins. bore. Distance 8 rounds, 31 miles.

Lurssen-Daimler	1:00:03 2/5
Labor V	1:28:43 3/5
Caprice	2:11:35
Elle	2:30:32

Average speed 26.9 knots.

Prix de la Riviera, for 60-foot cruisers maximum. Motor 6.1 inches bore. Distance 8 rounds, 31 miles.

Chantecler II	1:06:39
La Quise	1:10:21

Average speed 24.3 knots.

Prix de la Condamine, handicap for cruisers and racers. Distance 15½ miles.

Labor IV	32:27
Chantecler II	34:09
Hispano-Suiza	45:56
Vedette	1:01:03
Caprice	1:03:13
Elle	1:12:51
Ondine	1:26:35

Coupe des Nations. Three boats per country. Distance 16 rounds, 63 miles.

Lurssen-Daimler (German)	2:01:20
Chantecler (French)	2:06:12
Hispano-Suiza (Spanish)	2:32:36

Average speed, 26.7 knots.

Nautical Mile and Flying kilometre, open to all boats having finished in a race.

Cruisers	Mile	Kilometre	Total
Sigma-Labor	1:58 1/5	1:17	3:16 1/5
Lurssen-Daimler..	2:04 1/5	1:14 1/5	3:18 2/5
Labor IV	2:20	1:22 3/5	3:42 3/5
Hispano-Suiza	2:49 2/5	1:37 1/5	4:26 4/5

Racers	Mile	Kilometre	Total
Ursula	1:35 2/5	0:58 2/5	2:34 1/5
Sigma-Labor	1:39 2/5	0:59	2:38 2/5

Fastest Round of the Course.

	Time	Speed
Sigma-Labor (hydroplane "cruiser")	5:22	37:8 knots
Miranda IV (hydroplane "racer")	5:49	34:6 knots

The New York-Bermuda Race.

The Revised Conditions as to Rating Contestants. The Prospects for the Fifth Annual Event. A Brief Retrospect of the Past Races and the Boats That Have Competed in Them.

ON Saturday, the 17th of this month, the fifth annual Bermuda Race will be started from off the National Yacht Club in Gravesend Bay. Run for the first time in 1907 when motor boat racing was still very young, the Bermuda race was the first ocean contest for motor boats and in the language of the newspaper reporter came to be looked upon as the "classic event" in long distance marine motoring.

Although it has been surpassed in length, in number of entries and even in popular interest by a number of ocean contests, the race for the James Gordon Bennett cup still holds its own even though there were but two contestants in last year's event. This falling off in the number of entries may be accounted for, to some extent, by the fact that it followed the Havana race too closely, giving neither the public nor the contestants time to "come back." At any rate, with a number of new boats to draw from, it will be surprising if this year's running of the event is not a great improvement as far as numbers are concerned, and then, there is the possibility of a torpedo boat escort, think of it, that will ensure a degree of safety for the contestants far greater than that to be had in the seething metropolis. This feature should attract the lovers of expurgated ocean racing. Entries will be received as late as one week before the start, and therefore nothing very definite can be said on the subject at this time.

The conditions this year remain pretty much as they were last season, with the exception of the rateing clause. Last year's race was run under the 1909 rules of the American Power Boat Association, but the 1911 rules of that body will be employed this year with the modifications as follows: "The midship section to be expressed in square feet and to be obtained in this manner: with the boat in the same trim as when being measured for load water-line length, divide the load water-line length into five (5) equal parts or stations. At each of these points obtain the area of the section in the following manner: divide the beam (B) into five (5) equal parts or stations, and at the first inboard station from either end measure perpendicular from the water surface down to the under side of the boat's planking (C). C x B will give the area of the section. Integrate the areas thus obtained by Simpson's Rule, obtaining the volume of displacement in cubic feet. This result, multiplied by 64 for saft water, will give the displacement in pounds. Then the midship section shall be calculated by multiplying the displacement in pounds by a constant (C) and dividing the product by the load water-line in feet.

$$MS \frac{W \times C}{L.W.L.}$$

The constant for salt water is .0284.

The run to Bermuda has been made so frequpently during the last few years by motor boats of all sizes, that the course has long since lost what terrors it may have had when Ailsa Craig and Idaho breasted the line in 1907. Both these boats were 60-footers, the former equipped with a 60 h. p. Craig motor, and the latter with a 25 h. p. Standard. The record of 65 hrs. and 49 min. established by Eilsa Craig at that time was a remarkable performance and has never been approached. Ailsa Craig was designed by A. Carey Smith especially for this race.

The success of this first long distance ocean race led Mr. Bennett to offer another cup, the present one, known as the James Gordon Bennett Challenge Cup, with the condition that it must be won three times by the same owner before it should be awarded permanently. At the same time a prize of $1,000 was offered for all future races.

In 1908, in spite of the lack of interest in the event, S. W. Granberry showed his sporting spirit and entered Irene II, a boat built for the Marblehead race. She was powered by a Standard engine of only 18 h. p. and while of course completely outclassed, her performance helped materially to establish confidence in the ocean racing of motor boats.

Four boats competed in the races of 1909, viz.: Ilys, owned by J. G. N. Whitaker, of the Yachtsmen's Club of Philadelphia; Nereides II, owned by Francis Rogers, of Camden, N. J., a member of the Cape May Yacht Club; Heather, owned by Richard Levering, of Cincinnati, and Insep, owned by William Cooper Proctor, also of Cincinnati. Heather won the race in 80 hrs., 56 mins. and 18 sec., falling far short of the record set by Ailsa Craig. Heather and Insep are both 58-footers of 53 feet water-line, 12 feet beam and 4 feet 6 inches draft. The former was driven by a 6-cylinder Standard of 6 inch bore and 8 inch stroke, rated at 40 horse power, while Insep's motor was a 50 h. p. Jager.

Ilys became well known last year through her performances in several of the ocean races. She was designed by Thomas Bowes and is 53 ft. 3 in. over all, 47 ft. 6 in. on the water line, by 10 ft. 6 in. beam and 3 ft. 3 in. draft. She was powered with a 4 cylinder, 25 h. p. Hall motor. Nereides II, a 55-footer of 11 ft. beam and 4 ft. 6 in. draft, carried a 40 h. p. heavy duty Sterling.

In point of interest and number of entries, the 1909 race was the most successful ever laid over the course, and such wide-spread interest was evinced that it was decided to race home again for a cup offered by the Crescent Athletic Club. Three of the boats started and Ilys won from Heather and Insep in 78 hrs. 52 min. and 50 sec.

The 1910 race started for the first time up the Hudson River from a point opposite the New York Motor Boat Club house. Both of the boats were interesting craft and untried at that time. Yo Ho is a 46-footer equipped with two 2-cycle motors driving twin screws and aggregating 38 h. p. She was built by the Bath Marine Construction Co., as were also her engines, and was the first boat ever entered in a Bermuda race equipped either with twin screws or 2-cycle motors. Eronel II was planned especially for the race by the designers of Ailsa Craig; she is a 45-footer, equipped with a 4 cylinder Craig of nearly 38 h. p., and has a cockpit amidship and flush deck aft. The race was won by Eronel II in 88 hrs. 5 min., actual time, against Yoho's 92 hrs. 35 min., which was corrected to 89 hrs. 19 min. and 28 sec., the difference in corrected time therefore being 1 hr. 14 min. 28 sec. in Eropel's favor.

The race this year will be run under the supervision of the Motor Boat Club of America, acting in conjunction with the Royal Bermuda Yacht Club. And several other extracts from the conditions recently issued are as follows: Time allowances shall be figured according to the American Power Boat Association time allowance table, the distance for computation for allowance to be on a basis of 670 nautical miles.

* * *

The race committee, comprehending that those entering the race have a thorough knowledge of the fuel necessary to make the passage, does not specify any quantity, but the same must be sufficient to complete a distance of at least one and one-half times the distance between New York and Bermuda. No ingredient shall be used to increase the power of fuel.

Boats must be equipped with suitable spars and rigging to carry sufficient sail to give them steerage-way in a moderate breeze. This sail may be spread in any shape, but the total area of canvas must not exceed in square feet the square of the over-all length of the vessel divided by eight as a constant. This sail may be carried at all times.

* * *

No boat will be allowed to start with less than six men aboard, one of whom shall be a practical navigator, one a practical engineer, and at least half of each crew must be amateurs.

* * *

Last month we mentioned several possible entrants, among them the new 82 footer, Sybilla II, built and equipped with Craig engines by the Mathis Yacht Building Co., of Camden, N. J., for Mr. J. F. Betz, of Philadelphia. A picture of the launching of this boat is shown in the "Yard and Shop" section of this issue, and if she is entered, as we have every reason to suppose, she will be the largest boat that has thus far competed in the race.

Another boat mentioned was the Whittlesey 75-footer, building and nearly completed for Mr. A. W. Teal, and we are safe in saying that unless something unforeseen happens, she will be entered. Calif, the Havana racer, belonging to Mr. M. E. Brigham and Samuel Cochrane's Eronel, are also probable entrants.

The Bermuda Races in Tabloid Form

Length of Course, 650 Nautical Miles.

Record time made by Ailsa Craig in 1907, 65 hrs., 49 min.

Boats. Length.	Motor.	Winner.	Elapsed Time.	Corrected Time.
1907.				
Ailsa Craig..60 ft.	60 h. p. Craig	Ailsa Craig	65 hrs. 49 min.	65 hrs. 49 min.
Idaho .....60 ft.	25 h. p. Standard		75 hrs. 2 min.	66 hrs. 5 min. 22 sec.
1908.				
Ailsa Craig..60 ft.	60 h. p. Craig	Ailsa Craig	66 hrs. 33 min. 30 sec.	66 hrs. 32 min. 30 sec.
Irene II....40 ft.	18 h. p. Standard		90 hrs. 40 min.	70 hrs. 16 min. 36 sec.
1909.				
Heather ....58 ft.	40 h. p. Standard	Heather	80 hrs. 56 min. 18 sec.	80 hrs. 56 min. 18 sec.
Nereides II..56 ft.	40 h. p. Sterling		91 hrs. 10 min.	83 hrs. 46 min. 36 sec.
Ilys .....50 ft.	25 h. p. Hall		96 hrs. 6 min.	91 hrs. 51 min. 7 sec.
Insep .....58 ft.	50 h. p. Jager		97 hrs. 45 min.	97 hrs. 12 min. 1 sec.
Bermuda to New York.				
Ilys		Ilys	78 hrs. 52 min.	
Heather			80 hrs. 15 min. 34 sec.	
Insep			101 hrs. 43 min.	
1910.				
Eronel II...45 ft.	38 h. p. Craig	Eronel II	88 hrs. 5 min.	88 hrs. 5 min.
Yo Ho ....46 ft.	Two Bath 2 cycle motors aggregating 28 h. p.		92 hrs. 35 min.	89 hrs. 19 min. 28 sec.

Boarding Steps for the Cruiser.

Seven Different Methods and Drawings for the Construction of This Indispensable Part of the Equipment. Devices That Fit All Sorts of Conditions, Tastes and Pocketbooks.

THE PRIZE CONTEST—Answers to the First Question in the April Issue.

Strong and Easily Folded.

The Prize Winning Answer

PLENTY of freeboard is one of the essential features of any boat for open water, which makes a little help very acceptable when getting aboard from a tender, especially if there are ladies in the party. Even on a small cruiser, boarding steps are very convenient; the trouble is they are so awkward to stow away when not in use. The sketch shows an arrangement which overcomes this difficulty. The steps can be folded up and stowed under a seat or lashed on deck.

Each side is made in two pieces held together by heavy butt hinges. The back portions of the sides should be made of oak, as they have to carry the entire load, and are hung over the side by a hook made of brass or flat iron, as shown in the sketch; or by drilling a hole at the top and using a piece of rope to tie to the rail or cleat. The treads are hung in the back pieces by trunions at each end which fit into holes bored through the back pieces. These trunions should be of hard wood (dowel sticks as used by pattern makers are best). They should be a driving fit into the tread of the steps and a loose fit in the back piece. The cleats on the front pieces which support the treads when in use should be placed so that little if any load comes on the trunions. The hinges should be heavy and put on with good long screws.

To fold, the steps are stood on end upside down, which allows the treads to swing down between the back pieces. The sides are then folded over onto the steps and the whole thing is ready to put away. It is well to place a small stop on the inside of the back pieces for the treads to rest against when they are folded up.

Nothing is shown in the sketch to hold the sides together. This can be done by a piece of wood or a bolt across top and bottom, or the trunions of the treads can be left long enough to come through the sides and a washer and cotter-pin put on outside.

The hook for suspending, as shown by sketch, should be of brass or galvanized iron and can be set flush into the back piece if desired. It should be covered with heavy canvas to prevent scratching the paint or varnish. Pieces of garden hose split open (not cut in halves) and fastened to the front and back edge of the sides will make a fender to protect the tender and the paint of the top sides.

Dimensions have not been given as they can be made to suit the conditions. It should be remembered, however, that the rise should be a little more than the tread, and that the width of the tread should be at least double the width of the front piece of the sides. A glance at Fig. 1 showing the steps folded up will make this clear.

WM. GEO. ALLEN, Portland, Me.

Simple and Collapsible.

THE limited stowage space on a 25-ft. cruiser inspired the designing of a very simple and convenient set of boarding steps which can be constructed by following the drawings.

1½-in. oak or mahogany is the most suitable material for the steps, and when it is made up with brass fittings forms a very handsome piece of furniture. The drawings illustrate the method of construction clearly and the finish is a matter of taste, but a list of the necessary hardware is given below: Two 1-in. ring bolts, two 1-in. ring plates, two snap hooks, five pair 8-in. hinges, one pair 6-in. hinges. If soft wood and galvanized fittings are used the set will cost about three dollars.

One learns very quickly just where it is most convenient to board and permanent fastenings are much more satisfactory than shifting ones; however, if the hook style is preferred, strap iron can be bent to shape and screwed on the frame in place of the ring-plate hooks.

Use ring bolts just over the side and snap hooks attached to ring plates on the side of the steps. Set the ring plates far enough forward to cause the hooks to hold the steps snug against the boat side. Drill all holes before using the screws in hard wood or you may split a fine piece of wood as I did.

M. L. S., Northampton, Mass.

THE PRIZE CONTEST IN QUESTIONS AND ANSWERS

WITH this number of MOTOR BOATING the Contest has reached its second anniversary. It was announced in June 1909 issue, the first under the present management, and it has long since become what its originators believed it would become—one of the most important departments of the magazine. Its growth and improvement have gone hand in hand with the development of the magazine, from a rather delicate infant, whose toddling gait had not taken it far from home up to the time when its present nurses took it in hand; to a big, grown-up, man-size magazine, known wherever motor boatmen congregate.

THE CONTEST has gathered together material from all parts of the country and the answers to the questions—themselves suggested by the readers—have presented the views, not of an individual nor of a locality, but of many practical motor boat men from all parts of the country. It is, therefore, unique as a contest in that it is of even greater value to the readers in general than to the contestants. It is a great exchange for motor boating experience. The Contest Department has made good.

THE answers to the first questions this month illustrate and describe seven different methods of constructing a set of boarding steps, and among them every cruising motor boatman should find an idea suitable to his needs. The second set of answers are timely right now when so many of us are planning our vacation cruises and the suggestions that they contain should help materially in the work, or rather pleasure, of getting together the supplies and equipment. The third question answered here was chosen with the newcomers in mind and it brought forth suggestions and advice that it would be impossible to obtain from any other one source.

THE QUESTIONS FOR THE AUGUST CONTEST ARE THESE:

1.—Give instructions and sketches for constructing a practical but inexpensive turning buoy for marking the course of a motor boat race.

Suggested by A. O. Goold, Portland, Me.

2.—Discuss the best method of ballasting a medium-sized cruiser, considering cost, space occupied, suitable materials, amount and position for various effects.

Suggested by C. F. Chapman, New York City.

3.—Discuss taking a motor boat through canals, giving practical suggestions for "locking through," etc.

Suggested by R. S. Donell, Detroit, Mich.

ANSWERS to these questions, addressed to the Editor of MOTOR BOATING, 381 Fourth Ave., New York, must be: (*a*) In our hands on or before June 25, (*b*) not over 500 words long, (*c*) written on one side of the paper only, (*d*) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired). Questions for the next contest should reach us on or before the 25th of June.

THE PRIZES ARE:

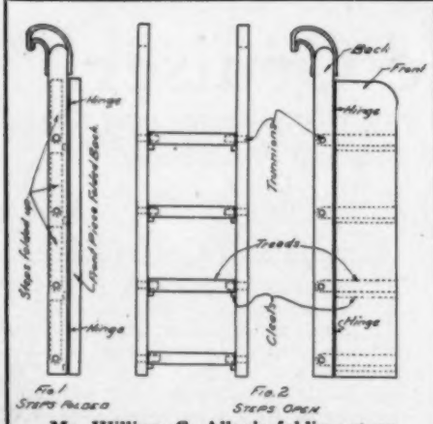
For each of the best answers to the questions above, *any article* advertised in MOTOR BOATING, of which the advertised price does not exceed $25, or a credit of $25 on *any article* advertised in MOTOR BOATING, which sells for more than that amount.

There are three prizes, one for each question, and a contestant need send in an answer to but one, if he does not care to answer all.

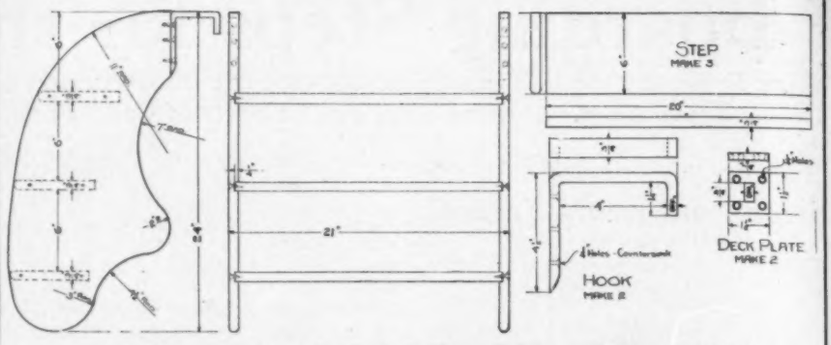
For each of the questions selected for use in the next contest, *any article* advertised in MOTOR BOATING, of which the advertised price does not exceed $5, or a credit of $5 on *any article* advertised in MOTOR BOATING, which sells for more than that amount.

For all non prize-winning answers published we will pay space rates.

When you send in your answer, state what you will take if you win the prize.



Mr. William G. Allen's folding steps.



H. D. Lowry's steps are ship-shape in appearance and easy to build.

Generally Useful.

BOARDING steps for use on a cruiser of moderate size should be serviceable in every way possible. These steps will answer for a step ladder on board and when landing at a high wharf, see Fig. 1, as they will stand on their base as well as hang. They must be light enough to float and not too heavy to handle easily. They will fold up and occupy little room and may be carried in the dinghy.

In proceeding to build them:

First.—Determine the distance from deck to water and decide on the number of steps required. If it measures 48 in. four steps are necessary, placing the lowest 15 in. from the water, the next 9 in. higher, leaving 6 in. from the top step to deck.

One foot is generally a convenient distance from water to bottom step, so by subtracting 12 in. from the perpendicular distance and dividing the remainder by 9 the number of steps is determined. If remainder is small, add it to distance from water to bottom steps, if large add another step at top.

A longer or shorter flight can be constructed from the working plan by using dotted lines O-Z or M-N as base lines, B, Fig. 3.

Second.—Determine the distance from the perpendicular to side of boat. See Fig. 11. Drop a plumb line over gunwale, measure distance shown by C, Fig. 2 (the dotted line B-D taking the place of the plumb line), add this to width of base to get dimension over all. Say this is 3½ in., then the dimension for the base would be 16½ in. plus 3½ in. or 20 in.

Third.—The dimensions for hangers should be obtained after finishing steps. The rails around decks of small boats vary in height from a 1½in. bead to a 6-in. railing and the hangers must fit over this. See Fig. 2. They are made of 3-16-in. by ⅞-in. iron strips tapered off at the outer end, drilled and countersunk for screws. See D, Fig. 3. Their shape must correspond with the rail, so dimension in Fig. 3 varies. If boat has no rail, put slots in deck and face with metal to receive ends of hangers. See F and G, Fig. 3.

While desirable to make the sides of one piece, it is not necessary, but the splicing should be at the bottom and behind steps; see dotted lines f-g and h-i in Fig. 2. To lighten, bore holes in sides (see Fig. 11). For folding steps, bore smaller holes and more of them, to prevent interference with hinges (see Fig. 1).

To make folding steps, determine dimensions as before. If steps are made 16 in. wide they should be 9 in. apart, so one half the width will fit easily between the steps when folded. See C, Fig. 4. Cut each step in half and hinge it as shown in A, C and H in Fig. 4. The hinges should be inlaid a trifle. Additional bracing should be provided by placing iron strips down the back on both sides of middle hinges, pivoted on each step, with lag screws ¼ in. by 2 in. See F and A in Fig. 4.

To prevent steps from toppling to either side when standing on base, the bottom step can be made 16 in. and the top step 13 in., making the sides converge toward the top (only necessary for folding steps).

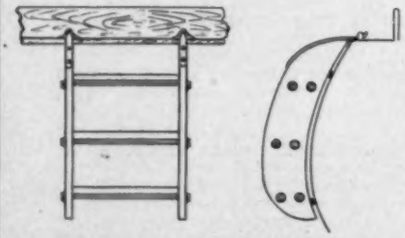
E, Fig. 4, shows a bead that can be put on as a hand grip at the dotted line T-L in D, Fig. 4.

A. Y. Dodge, Cincinnati, Ohio.

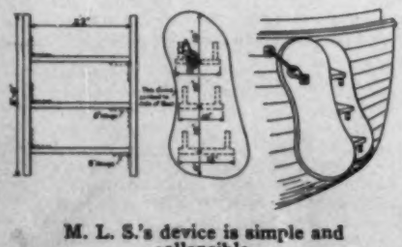
Easily Constructed.

THE boarding steps shown in the accompanying sketch were constructed by myself for my 32-ft. cruiser and proved very satisfactory. As the cost for all materials used was only $1.90, they were not a very expensive proposition.

The side pieces are made of ⅞-in. oak and cut to fit the side of the boat at the point where they are to be hung. The steps are of the same material and are mortised into the side pieces about half an inch. The whole structure is fastened together with rods, two under each step, with washers and nuts on each end. Care must be taken that the steps project below the side of the tender to be used, for if the tender can pass below them it is very likely to catch there and cause trouble. For the same reason steps should not project beyond the side pieces, although I believe it



The steps described by S. H. Wyatt.



M. L. S.'s device is simple and collapsible.

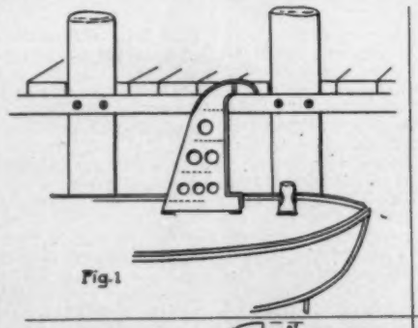


Fig. 1

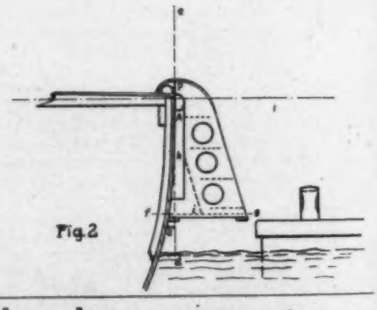


Fig. 2

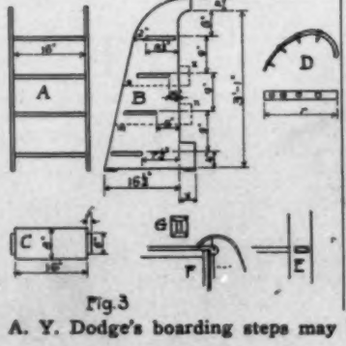


Fig. 3

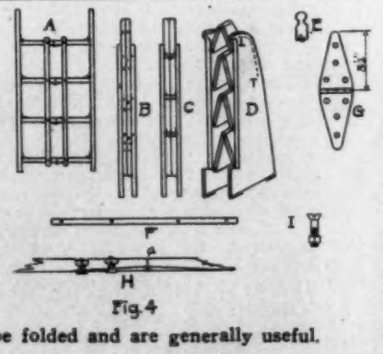


Fig. 4

A. Y. Dodge's boarding steps may be folded and are generally useful.

is the custom to have them do so. The side pieces should be about 15 in. and the steps 8½ in. apart. The upper side of the steps should be covered with rubber matting fastened on with round-head brass tacks. The addition of four rubber buttons to hold the side pieces away from the hull will prevent marring the paint.

The method of attaching the steps to the boat is clearly shown in the sketch. The deck fittings are two closed pattern chocks and the metal strips at the top of the side pieces are bent up so that they will not unhook from the chocks until the foot of the steps is out from the side of the boat at least a foot.

S. H. WYATT, Winthrop, Mass.

Adjustable Steps.

THIS form of steps is adjustable to varying heights of landing stages. The bottom swings out and rests on the platform, and allows the cruiser to come close to the same. The best feature is that the treads will always remain horizontal.

The oak brackets bolted to the boat are 2 in. thick and cut about the shape as shown. The two holes to accommodate the iron rods are spaced according to the desired width of the tread. These iron rods are of ½ in. diameter. The upper two form the centers on which the verticals of the steps swing and extend through the brackets and are held in place by nuts at the end. The lower rods only extend through the verticals. Before putting these rods in place, the treads are first put on, so that the rods will pass through the eyes in the iron strap under each tread.

The treads are 1¼ in. thick and are bolted to the iron straps as shown. The width and length can be as desired. The verticals are 1½ in. by 3½ in. and are all cut to the same pattern; the drilling for the rods is made the same in all. The ends are rounded off so as to rest square. The holes are made so that the nuts on the rods can lie flush with the surface of these verticals.

L. R. KELLY, Philadelphia, Pa.

Simple and Ship-Shape.

VERY neat boarding steps can be made from the accompanying drawings at very little cost and labor, that will suit any cruiser up to 45 ft. in length.

The material required is as follows:

1 piece of oak, cypress or mahogany 8 ft. long, 12 in. wide and ¾ in. thick.

2 pieces brass or iron 12 in. long, ¾ in. wide and ⅜ in. thick.

2 pieces brass or iron ¼ in. thick and 1½ in. square.

26 brass screws.

The steps should be covered with rubber tracking to prevent slipping.

H. D. LOWRY, Richmond, Va.

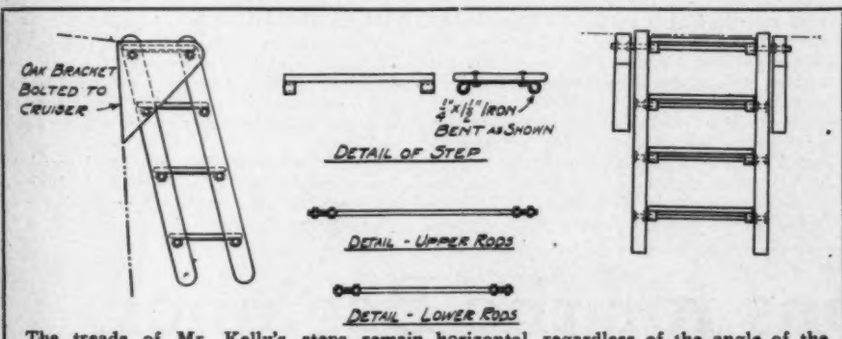
The "Jacob's Ladder."

IDEAL boarding steps to conform with the rest of the equipment for a motor boat should be constructed so that they will not only be serviceable, but easily stowed away when not in use. Probably the simplest and most easily constructed side steps are those known in marine circles as the "Jacob's Ladder," as they combine strength with lightness and can be rolled up in a compact bundle when not in use; they can be thrown over without fear of marring the cruiser's sides.

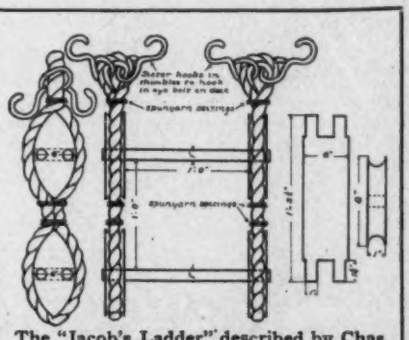
The accompanying sketches show the construction of a set fitted with two steps, but any number may be added if necessary. The steps proper are formed from a piece of one-inch oak six inches wide and one foot, two and one-half inches long. At each end they are slotted out to leave two lugs, one inch by one and one-quarter long, to go through the risers.

The risers are shaped from a piece of one-inch oak eight inches long and are six inches wide in the middle, gradually tapering to nothing at the ends, and the edges are hollowed out to take a three-quarter-inch (diam.) rope. After the steps are fitted together the rope is passed around them and securely seized with spun yarn as shown in sketch. The ends of the rope are spliced together and thimbles seized in the bights fitted with sister hooks to hook in eye-bolts in the deck or on stanchions, as preferred.

CHAS. MCILROY, New York City.



The treads of Mr. Kelly's steps remain horizontal, regardless of the angle of the sides.



The "Jacob's Ladder" described by Chas. McIlroy.

Fitting Out a 30-Footer.

The Equipment and Supplies Required by a Party of Four Persons on a Month's Cruise. Some Practical Suggestions that Will Help in Stocking Up for the Vacation Run.

THE PRIZE CONTEST—Answers to the Second Question in the April issue.

Regarding the Duffle.

The Prize Winning Answer.

ASSUMING that the motor, lighting outfit, galley, mess and deck gear have been thoroughly overhauled, in other words, that the boat is ready for the duffle, outfitting for a cruise resolves itself into the problem of taking care of the man and the inner man.

In taking care of the man, carpets and linoleum are an abomination. Carpet is beautiful to look at, but it gets wet and stays in that condition. Linoleum is cold and clammy, especially in the early morning before the sun. But cocoanut matting is the best floor covering yet. It will get wet, wringing wet, but it dries out in a "jiffy." If it gets dirty souse it overboard a few times and then hang out. It will be dry before the rest of the boat is cleaned.

Everyone in the party should have a pair of blankets, preferably a dark color. Just now it is possible to get condemned army blankets, red or gray, at a reasonable price. These blankets have been condemned solely on account of the adoption of the olive drab as the standard army color. They are practically waterproof, and there is no question as to their warmth.

Pillows should be fitted with cheap gingham slips. Sheets should have no place aboard, unless you intend running the boat as a floating linen closet. On a cruise one does not have the time, much less the inclination, to make up a bed with sheets. One rolls in a blanket and drops off like a log.

The personal outfit should consist of two flannel shirts with Stanley pockets, two pair duck trousers naval style, duck hat, coat sweater, white sweaters and a bathing suit. This last item is worn all the time, except when going ashore, when one really wears underclothing and stockings.

The ditty bag contains shaving outfit, comb and brush, and tooth brush and paste.

Each man provides his own bath towel, the boat will provide about one dozen face towels.

Oilskins should be yellow, double breasted. Don't take the coat not having wide storm flaps. Nothing is so uncomfortable as water under an oil skin.

The inner man will require as lazarette stores:

1 dozen cans baked beans.
½ dozen cans sliced bacon.
5-pound can pilot or captain's bread.
2 dozen cans assorted condensed soups.
½ dozen cans evaporated milk.
1 bushel potatoes.
½ dozen cans sardines.
5 pounds coffee.
7 pounds sugar.
Bag salt.
2 cans pepper.

Bread, butter, meats, etc., are taken on daily or at such ports as the steward demands.

Above all, don't forget that you cannot gauge a man's appetite while afloat from what you have seen him eat ashore.

C. PETERSON, Brooklyn, N. Y.

Keeping Warm and Dry.

FIRST of all, take enough bedding. It is hard to keep warm at night, especially for the fellows that sleep in the cockpit, which, in fair weather, is the best place. A woolen bathrobe with hood that may be pulled up over the head is an excellent thing to have along. Of course, you must have warm woolen blankets; army blankets are the best

and rubber blankets are mighty handy, too.

Then you must keep dry. Last summer we had to sail twelve hours in the rain and then turn in with no chance for drying off. Here is where the oilskins, "so'westers," and rubber boots are invaluable, and the rubber blankets keep bedding and other things dry during the day.

A real cruiser sometimes gets his meals on the boat, sometimes over a fire ashore. A good stove is of prime importance. We have discarded several other kinds for one that burns denatured alcohol. A coffee pot, frying pan, a couple of broilers, and a good stew-pan come into daily use. For the table, nothing is as convenient as white enameled dishes. They are light and unbreakable. Supplement these with a libral supply of wooden plates which are to be thrown overboard after use. These save a lot of dishwashing, the one feature of cruising which no one really enjoys. A luxury which is well worth while is a supply of paper napkins. Make a rubber bag for knives, forks and spoons. This keeps them dry and makes it easy to take them ashore for the bonfire meals. By all means have a good size market basket for this use and for shopping. We use Mason jars for keeping coffee, sugar, cereals and other foodstuffs and even use them to keep screws and nails in. Everything keeps dry in them and can't spill.

The food supply must be chosen according to individual tastes, but it is not safe to rely too much upon chances for replenishing the stock. So take a lot of canned goods along. They'll keep if you don't use them. Condensed milk in small cans is best. We are especially in favor of the small cans, for once we had a large one upset in our icebox! We always take a large supply of home-made salad dressing. It can be used in more ways than you would think—even on crackers for a light lunch. And don't forget the light lunches. You'll want many of them while on the run. There may be a long time between meals, and then a little bread and butter and jam will save the day.

Don't be afraid of taking along too much rope. Bolt rope is good because strong and pliable. When you want a piece of rope you want it mighty badly, and good use will be found for it all from the anchor-line and painters to flag halliards, and small pieces for odds and ends.

Last, but not least, carry duplicates of such small engine parts as may become worn or broken. It is a good deal more convenient to replace such parts and then repair the lame ones, than it is to lay up for repairs.

M. A. ODELL, Yonkers, N. Y.

Make Out a List.

SINCE the enjoyment of a cruise depends largely upon the care with which the boat is outfitted, a little extra time spent in selecting equipment will pay big dividends in comfort.

Make out a list of everything needed and as each article is brought on board and put in its proper place, qcheck it off from the list. This checking off process lands lots of small articles on board that would otherwise be forgotten.

The most important item is a good crew. Pick a crew out of the right sort, and the cruise will be a success no matter what happens.

Be sure the boat is equipped to comply with the law, not only because it is required, but because of your own safety. Have the fire extinguishers where they can be reached in a hurry, not tucked in a locker and forgotten.

The compass and binnacle should receive careful attention. A 4-in. liquid compass, corrected for deviation, is about right for a 30-ft. boat, and the electric lighted binnacle is fine.

Government charts of the route to be traveled, parallel rulers, dividers and azimuth, complete the amateur navigator's list of necessities.

A good outfit of first-class tools and spare parts should be carefully stowed. Don't forget an extra propeller. Have the bilge pump in good order and use it. If the boat is lighted by kerosene, it is a good plan to have a small tank with faucet built into the boat, but the ordinary five-gallon can firmly lashed in the cockpit will do. If electricity is used, see that the wiring, battery and switchboard are in good order. Before starting out charge the battery to its fullest capacity.

The culinary department should be carefully looked to. A shipmate or kerosene stove, cooking utensils, crockery and a full stock of provisions come in here.

A dinghy capable of carrying the entire crew should be taken along, preferably lashed to the cabin top.

Bedding and cabin fixtures should be suitable for party. Copper screens fitted to the ports are necessary if mosquitoes or black flies are to be expected.

If the cruise is to be made in southern waters, either have the bottom of the boat covered with copper to 6 in. above the water line or put on a good coat of bronze paint before starting.

Overhaul the ground tackle, see that everything is in proper shape and ready for heavy weather. Carry a drogue or sea anchor.

Something to read and a banjo or mandolin will help pass the time while waiting for a fog to lift or the rain to let up.

With such an outfit on board, gasoline and oil tanks filled to the top—don't forget cup grease—a good seaworthy boat, reliable engine and congenial crew, the trip is sure to be a success and another cruise will go down to history.

See MoToR BoatinG answers and questions department for lists of tools, method of carrying dinghy, chart cases, cabin ventilation, etc.

CALVIN GRANGER, Canandaigua, N. Y.

Suggestions for the Beginner.

Explanations of the Rules of the Road, Nautical Etiquette and the Use of Colors, Signals, Etc. A Lot of Information That Should be Helpful to the Younger Members of the Fraternity.

THE PRIZE CONTEST—Answers to the Third Question in the April issue.

Perfectly Simple.

The Prize Winning Answer.

RULES of the Road.—No better suggestion can be given to the new motor boat owner about the rules of the road than to impress upon him their simplicity and similarity to the conditions he is meeting every day on land as he walks down the crowded sidewalk or drives a horse through the town.

There the rule is—Upon meeting, turn to the right, and upon overtaking pass to the left. Upon approaching diagonally the same rule holds—that is, give way to the right. If you are on the other fellow's right hand then you have the right of way, if he is on your right, then he has the right of way and you must let him pass in front of you. Apply this on the water substituting starboard for right and port for left and you have all there is to it.

At night it is equally as simple, for if when approaching diagonally the other fellow has the right of way you will immediately see the danger signal—the *red* side light—then you must give way to the right and pass astern of him. When you have the right of way you will see his green side light, which is the signal that the way is clear for you to hold your course. When you see both the red and the green simply turn to the right a little and show him your red.

Signals.—The song of the old "Salt" goes something like this:

"If one whistle she should blow,
To starboard then your bow must go,
And speeding on across the tide
She'll pass to port along your side.
If two whistles she should blow,
Then to port your bow must go,
And if the space is fair and wide
You'll pass along her starboard side.
From three short blasts 'tis yours to learn
That she is going full speed astern."

Colors.—The following are called colors:

1 Pennant ("V" Shape).—The Club Signal, flown from the bow staff of motor boats.

2 Burgee (Swallow-tail).—The Owner's Private Signal, flown from the mast-head on boats with a signal mast.

3 Rectangular Flag.—The Yacht Ensign, Union Jack and Officers' Flags, flown as follows: The Ensign on taffrail staff, Union Jack in place of Club Pennant on National Holidays when at anchor, Officers' Flags flown by Flag Officers in place of their private signal.

Absent, Meal and Fuel Flags are not termed colors and are flown from the starboard spreader on boats with a signal mast.

Don't fly two or more flags or colors from one hoist or any flag or color with a name spelled out thereon.

Color Routine.—Motor boats in commission make colors at 8 a. m. and haul down at sundown.

The time for making and hauling down colors is taken from the senior officer present or from a United States warship.

Salutes.—Salutes on motor boats should be made by dipping the Ensign.

In no case is the Ensign to be dipped more than once in one salute.

When it is impossible to salute by dipping the Ensign, salutes may be made by three long blasts of the whistle or by the firing of one gun.

Guns should not be fired on Sunday except as a signal of distress.

In making salutes the junior in rank should take the initiative.

E. M. CARPENTER, Norwich, Conn.

Read the Pilot Rules.

A CLOSE perusal of the pilot rules, two copies of which must be kept aboard all the time according to the existing laws, and which may be obtained at any custom house, definitely state all the rules of the road, signals, equipment, etc., required of boats navigating the inland waters of the United States. Each operator should familiarize himself with these laws before venturing into navigable waters to avoid any misrepresentation of signals blown. A summary of the different rules will reveal the fact that in all cases wherever possible you must keep to the right, except when meeting or passing sailing craft, which always have the right of way.

While there are many times, even when you have the right of way, that courtesy demands you to give way, this is especially true when passing ferries and large ships or steamers. The experienced will readily realize that pilots, especially in tide waters, lay their courses to make their landings according to

wind or tide and unlooked for changes may take numerous maneuvers and loss of valuable time on their part to get back on their course. A little courtesy of this sort on the part of masters of small craft will avoid controversy and create a better feeling between the amateur and professional pilots.

In meeting or passing long tows such as are seen on the Hudson River or Long Island Sound, it is needless to expect them to alter their courses in passing, so always give them a wide berth as one can never tell how the tug must sheer off to swing her tow to clear some obstruction. When passing a tow at night watch the lights and always be positive that the last barge or boat has passed, as negligence of this sort has caused many fatal accidents.

Statistics show that at least seventy-five per cent. of accidents are caused by carelessness and inattention, so the best advice to both the amateur and the experienced is always have a man at the wheel that you can depend upon to keep his eyes open and who will take no unnecessary chances. The following old adage is easily memorized and if followed there need never be any danger of an accident:

"When in danger or in doubt
Always keep a good lookout,
If you have no room to turn
Stop her, back her, go astern."

E. A. CRAWFORD, Newark, N. J.

Signals, Flags, Etc.

AMONG the first things for the new boatman to learn are the passing signals and the rules of the road. The whistle signals may be remembered as follows: One blast means that I am directing my course to starboard, or, in other words, I am going to the right. Two blasts mean that I am directing my course to port or that I am going to the left.

If for any reason you do not understand the course or signals of the other boat, slow your engine down and blow four or more short blasts on your whistle. Never blow cross signals, i. e., answering one blast with two or the reverse. If the boat ahead does not answer with the same signals that you blow her proceed slowly until she does.

In case you get into too close quarters before getting straightened out on your signals, reverse you engine and indicate the same by blowing three blasts on your whistle.

When overtaking a vessel you will blow the same signals as you would in meeting head on: one blast, meaning that you are coming up on her starboard side, and two blasts, meaning that you are coming up on her port.

The overtaking boat must always keep clear of the boat ahead until she has passed her. In the case of boats meeting nearly head on, the one that has the other on her starboard side must keep clear.

These rules are printed in pamphlet form by the United States Government and all motor boats are required to carry two copies on board.

When boats pass one another the general practice is to salute with three short blasts of the whistle, though the proper salute is by dipping the ensign.

As "a boat is known by the flags she flies," the new motor boatman should know what flags to fly and when to fly them.

The United States yacht ensign is always flown on the stern.

The club flag should be flown on the bow staff. If the boat is large enough to have a signal mast the boat's name pennant or the owner's private signal should fly on it.

Never fly more than one flag at a time on a pole. On Sundays and on national holidays the United States Jack is flown on the bow staff when at anchor. Colors are made at eight bells (eight o'clock) in the morning and hauled down at sunset. In entering a harbor before or after colors, have all flags flying, and as soon as you come to anchor, down colors. The night pennant is flown from the masthead after sunset.

D. L., Richmond, Va.

Colors and Etiquette.

ANY yachtsman can tell at a glance whether a boat is under the care of a competent man or a lubber, and he tells this by its flags. The writer once saw a motor boat flying but one flag—a United States flag, and that on its bow-staff. He at once wondered if it were safe to travel with a man who perpetrated such a crime. A standard United States flag has no place whatever on a pleasure boat, and even if it were a yacht ensign, it would be as much out of place at the bow as would a man's shoes worn on his head—and looks just as funny.

The yacht ensign, which has been in use for sixty-three years, is similar to our national emblem, except that on the blue field is a fouled anchor surrounded by thirteen stars. This, on motor boats, is always flown from the stern-staff. The club flag, a three-cornered affair, is used on the bow-staff. Then there may be the owner's private signal (a swallow-tail flag) and the officer's rectangular flag.

These four flags are the "colors." If you have more than two of them, you must have a signal mast, preferably with a yard arm, for there must be but one flag on the bow or stern-staff. The private signal is then run up to the mast-head. An officer of a club flies the officers' flag at the mast-head. It is allowable, but not necessary, to fly both of these flags. In this case use the officers' flag at the mast-head and the private signal on the starboard yard arm. If cruising with another club, of which the boat owner is a member, but not an officer, his officers' flag should not be used.

Don't raise your colors before eight o'clock in the morning or keep them up after sunset. If a naval vessel is in the harbor take your time for colors from it. Or, if you enter a harbor shortly before eight or after sunset, colors should be displayed and taken down immediately after anchoring.

For a salute "dip" the ensign once. Don't blow the whistle for this purpose unless you want to be "fresh." If you are not thoroughly familiar with the proper use of the cannon, don't use it at all.

It is a deplorable fact that steamboat captains and pilots will not give signals to motor boatmen, and it is our fault, too. A captain of one of the large night boats told the writer it was a waste of steam to blow a signal to "those fellows" for they didn't know what it meant! One of our clubs has an excellent rule of not allowing the use of its burgee to any member until he has shown himself proficient in the rules of the road.

By all means have two copies of the "Rules of the Road" aboard, as required by law, and *learn* them.

Under many conditions you have the legal right to signal the big fellows to get out of your way, but don't do it unless absolutely necessary. There is little satisfaction in knowing that you can get damages if your boat is sunk under such conditions. Be as willing to go out of your way as the steamboat pilot is unwilling to go out of his.

M. STEMBER, Brooklyn, N. Y.

Advice for Beginners.

THE matter of etiquette ought not to worry the novice who has eyes and can use them. Observe how the older fellows do and there is little danger of committing error. The beginner would exercise excellent judment by not crowding up to a float already pretty well occupied by boats. It's quite easy to monopolize valuable space and inconvenience one's friends. The old-timer is careful to keep his gear off the float and out of alleys in the club house. He isn't apt to run his boat at full speed where the propeller wash will bother occupants of other boats, upset their oil cans and bump elbows and shins against hard spots. Slow down when approaching a rowboat or canoe; run carefully if such small fry have women aboard, because the wash from really slow-going motor craft has been known to capsize canoes.

The novice should never go about with a chip on his shoulder looking for a race; that will belittle him among the fraternity. If he is lucky in having a fast boat there will be plenty of opportunity to rub it into the fellow who tries to show off. Some beginners purchase a yachting uniform with their new boats; such personal display is not considered good taste. Owners of some of the biggest yachts shun uniforms, preferring street dress when aboard their vessels. Paid hands on yachts wear blue and brass.

When the new motor boat is ready to be placed in commission the tyro should make sure that his equipment conforms to Federal regulations. It will be foolish to try to fool Uncle Sam's inspectors by purchasing a penny whistle and will-'o-the-wisp lamps. The government is in earnest, seeking to safeguard the public and everybody who operates motor-propelled vessels should cheerfully aid in the good work. And the novice will feel better to have an efficient equipment, even going a little farther in the matter of life preservers and fire extinguishers than regulations demand. He should not skimp on anchors and ropes. Gear, throughout, ought to be of the best, even if the boat is protected by insurance.

Main points of the United States pilot rules are easily committed to memory, the novice always having before him the fact that unnecessary whistling is forbidden under penalty of fine. The rules, in tabloid:

One short blast, I go to starboard.

Two short blasts, I go to port.

Several short blasts, not less than four, danger.

When danger signals are given the engines of both vessels must be reversed.

Cross signals are forbidden; that is, to answer one signal with two, or two with one. When such signal is answered, the usual signals for meeting or passing must be given and replied to.

On overtaking a vessel running in the same direction, one blast signifies that the overtaking vessel will pass to starboard, and two blasts, to port.

When power vessels approach each other at right angles or obliquely, the one that has the other on her port side has the right of way and shall blow one blast as signal of intention to cross the other's bow; the other vessel shall promptly answer with one short blast as signal of intention to pass to starboard and astern of the former, or otherwise keep clear.

In fog or thick weather, except when towing, give one long blast at intervals of not more than one minute. When towing, give one prolonged blast, followed by two short blasts, a prolonged blast meaning one of from four to six seconds' duration.

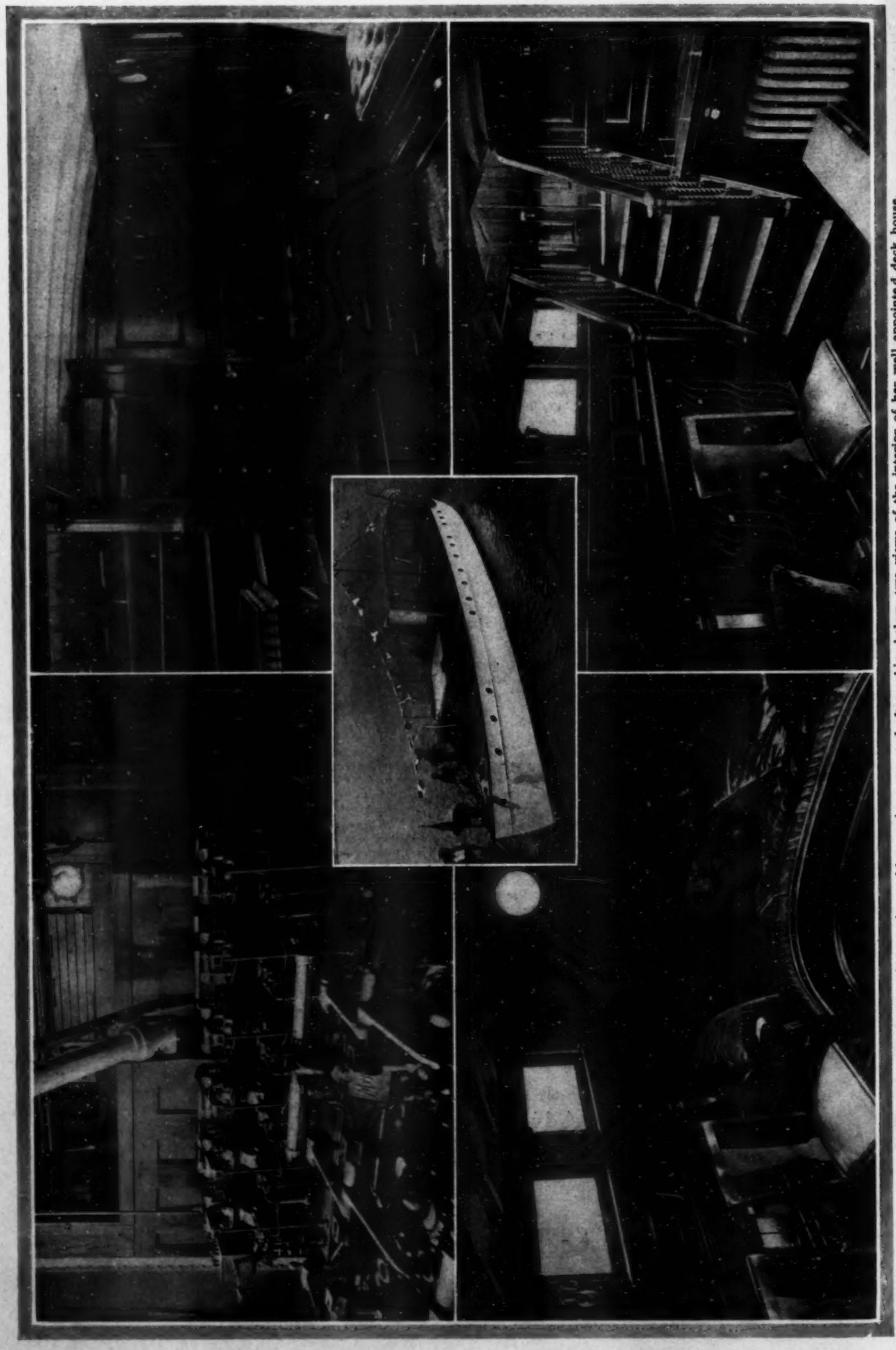
A vessel at anchor during thick weather shall, at intervals of not more than one minute, ring the bell rapidly for about five seconds.

Keep clear of sailing vessels, which, under the pilot rules, have the right of way. Don't try to cross a large sail craft's bow as a matter of self-preservation. It's difficult for the novice to correctly estimate the speed, footing and leeward tendencies of a big schooner or sloop.

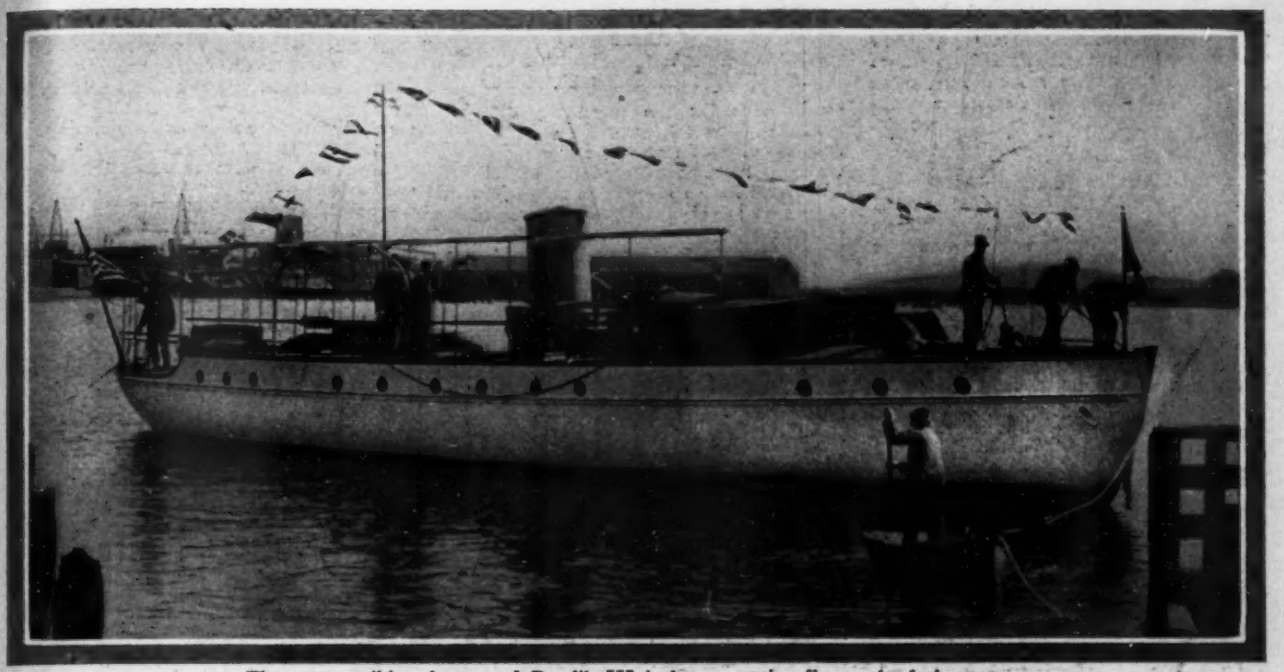
Night running, of course, requires a green light to starboard, a red light to port and range light aft for the smaller boats, with an additional white light forward on the larger. The novice ought to carry a white light in the cockpit to show in case of being overtaken and in danger of being run down.

Charts and sailing directions should be studied, for one's satisfaction in motor boating comes largely from knowledge of new roads to be traversed.

GEO. S. HUDSON, Boston.



Remlik III, an 87-footer. Above, views of her engine room and after cabin; below, two views of the interior of her well appointed deck house.



The most striking feature of Remlik III is her exceptionally ample deck space.

Remlik III, an 87-Footer.

REMLIK III, the largest power cruiser of the season to be launched in Boston, took the water from the yard of Murray & Tregurtha, South Boston, April 11. She was designed by Swasey, Raymond & Page for Willis Sharpe Kilmer, of Binghamton, N. Y., and is 87 ft. 6 in. overall; 80 feet water line, 14 feet beam, 4 feet draft and has a least freeboard of 4 feet. Power is supplied by two 60 h.p. Murray & Tregurtha motors of the heavy duty type turning propellers of 34 inches diameter and 42 inches pitch at 450 revolutions.

Remlik III, in many essentials, is a notable production, embodying features of design, power installation and arrangement of living quarters that should make the vessel very able and splendidly adapted to her owner's requirements. Strength and reliability have been thoroughly wrought out but the requirement of a fair turn of speed was not overlooked. The lighting is by electricity.

The deck is practically, unbroken, except for the forward house and a number of low skylights and ventilating hatches, and this spacious deck, which compares favorably in area with many much more pretentious yachts, is protected by an awing which extends from abaft the forward house to the forward end of the small cockpit.

The forecastle is entered through a companion and has accommodation for four, with toilet and ample storage. Next aft, comes the dining saloon, with plenty of light and ventilation provided by observation type windows. Beneath the floor of this room is space for general stowage of trunks, stores, etc. The compartment is finished in panelled light mahogany with maroon cushions, draperies and carpet. On the after bulkhead is a boufet with china closets to starboard and port.

Abaft the dining room is the galley which extends full width of the vessel and is reached by descending a flight of three steps. A hot water heating system is installed in the galley with radiators in every room.

Abaft the galley is the motor compartment, finished in butternut, with a wide alley between the engines which are of six-cylinders with make-and-break ignition, current being furnished by a Bosch magneto and storage battery charged by dynamo. The gasoline tanks are installed abreast the motors and have a combined capacity of 400 gallons.

Beyond the motor compartment, looking aft, is the owner's stateroom about double ordinary dimensions, with toilet room containing tub and shower and floored with tile. Next, aft, is the main cabin of generous proportions with winding stairs leading to deck and abaft this room is a guest's room, also equipped with toilet, and admirably lighted and ventilated by a raised skylight with ample glass. The lazarette is spacious and may be entered from deck or from the yacht's interior.

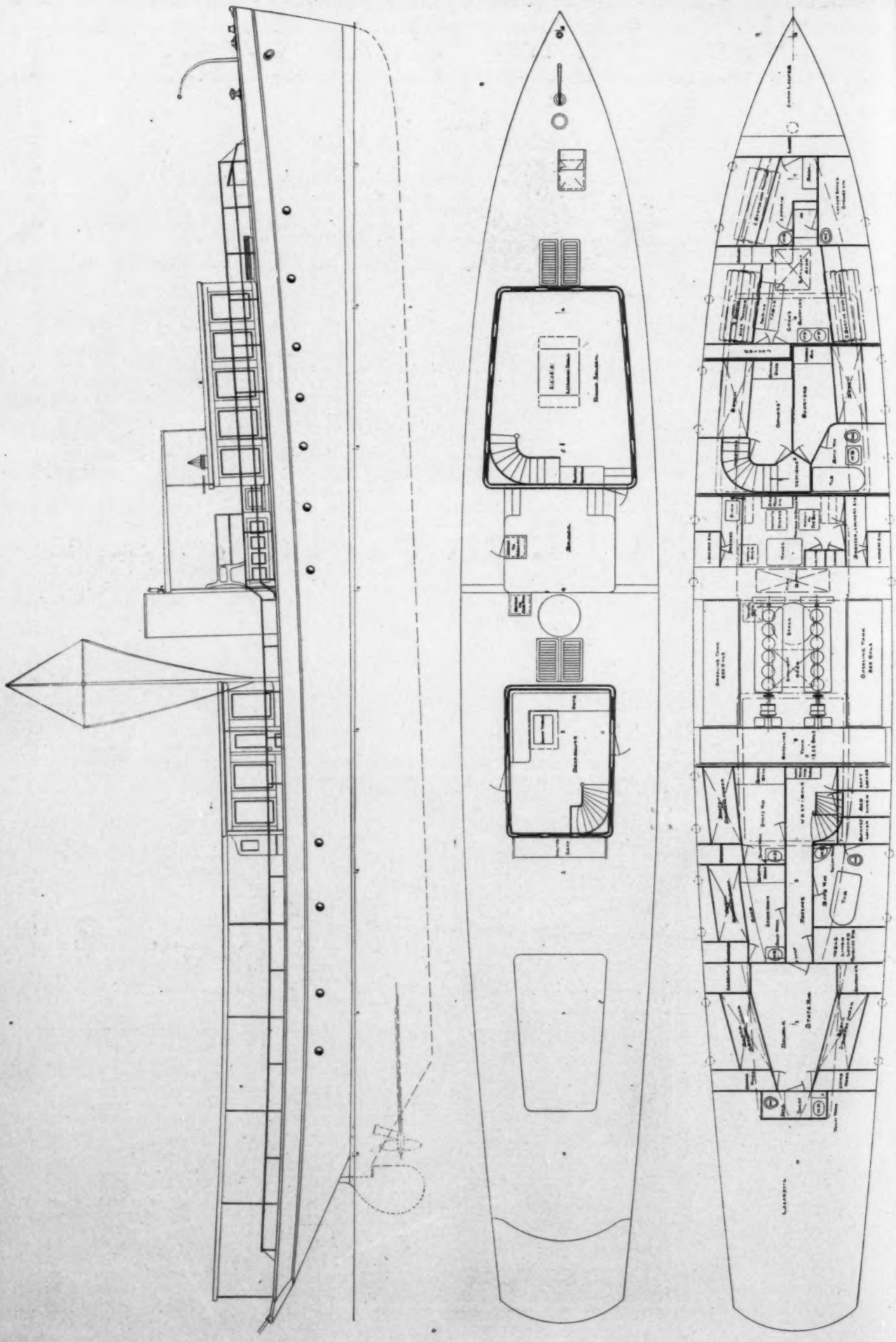
The steering bridge is abaft the dining room house with wheel on the after bulkhead and motor room telegraph standards to starboard and port. Control of the yacht is had by signals similar to those employed in navigating merchant vessels, the reverse levers and starting device being operated by the engineer.

In her construction oak was used for the keel and frames, the latter being 2½ in. square and spaced 10 in. apart except beneath the motors where they are spaced on 6 in. centers. The hull is double planked, the inner skin being of cedar with Georgia pine exposed to the weather. The superstructures are of teak and the decks of pine. Steel bulkheads are employed to separate the motor compartment from the other parts of the boat, access being had to this room through a deck hatch. The funnel which opens into this compartment takes care of the exhaust pipes, the whistle tanks, two mufflers and a water tank, with sufficient space left for ventilation. Auxiliary ventilating hatches are placed over each motor so that with the ports this compartment is thoroughly ventilated.

On her official trial the yacht developed speed of about 13 miles an hour. She will hail from New York but will be used mostly in connection with Mr. Kilmer's Virginia estate.

One of her six cylinder Murray & Tregurtha engines.

Remlik III, an 87-footer. Above, views of her engine room and after cabin; below, two views of the interior of hall with appointed deck house.



An 112-foot yacht from the designs of Tams, Lemoine & Crane, which will be able to maintain an average cruising speed of 14 knots, and, with her three large gasoline tanks, will have an extended cruising radius.

New Motor Boat Designs.

A 112-Ft. Cruiser.

ON the opposite page are shown the plans of a 112-foot cruising yacht recently designed by Tams, Lemoine & Crane, of New York City, for a member of the New York Yacht Club, who expects to use her for coastwise cruising and as a tender for a racing yacht. She measures 98 ft. 9 in. on the water line with a beam of 17 ft., a depth of 10 ft. 10 in., and an extreme draft of 6 ft. 6 in.

It will be noticed that she is equipped with two sets of engines placed amidships and three large gasoline tanks, one aft of the motors, and one upon either side of them, affording a total gasoline capacity of 2,925 gallons. There is full headroom in the engine room which is well ventilated, having a large skylight in addition to the stack.

In the bow of the yacht is the chain locker and just abaft of this is a locker extending the full width of the boat. The captain's room is next aft upon the port side and in this are two berths and a desk, bureau, etc. On the starboard side is the crew's toilet, on the outboard side of which are locker spaces. Aft of these rooms are the crew's quarters fitted with six folding pipe berths, a folding table, two wash basins, shelves, bureaus, etc. This compartment is entered by a companionway and ladder leading to the forward deck.

The owner's quarters are located aft of the crew's compartment and are entered from the port side of the deck house through a companionway leading into a vestibule. Forward of this vestibule on the port side is one stateroom and on the other side is another stateroom communicating with the owner's private bath. All of these rooms are completely furnished and equipped.

The forward deck house, which is unusually large, is finished in teak and is of the sunken type. It is furnished with an extension dining table and at the after-end of the room is a dumbwaiter to the galley. On the starboard side of the dumbwaiter are steps leading to the bridge deck.

Beneath the bridge is the galley and underneath the starboard side of the galley is a hatch leading into the main ice-chest, which is in the hold. On the port side a similar hatch leads to the storeroom. Directly aft of the galley is the engine room which is enclosed in a watertight bulkhead and is fitted with a pipe berth at the forward end for the assistant engineer. This room will contain two six-cylinder 200 horsepower, Craig motors and a separate motor for the electric light plant.

The deck house aft is designed to be used as a smoking and sitting room and the quarters below decks aft are entered from the starboard side of the deckhouse. These quarters are furnished with staterooms of ample size and a large bathroom upon the starboard side. A double stateroom communicates with a toilet room in the after part of the vessel. A low trunk cabin over these quarters insures good light and ventilation and the deck space is left unusually free with 132 square feet of open space aft of the trunk cabin.

The yacht is equipped with three boats including a launch, and will be able to maintain a comfortable cruising speed of 14 knots, with higher speeds for short runs.

A Fifty-Foot Passenger Launch.

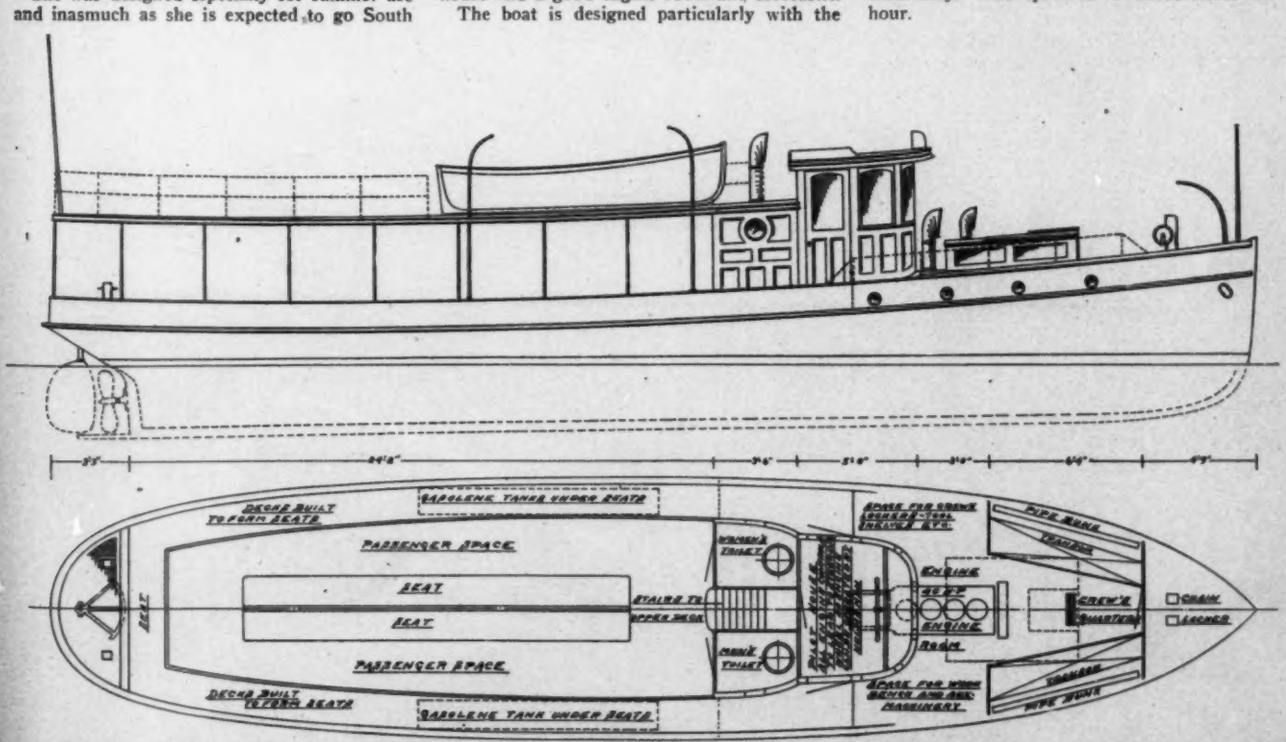
A MEDIUM sized passenger and excursion boat which will be used on a regular passenger route has been designed by Arthur P. Homer, 88 Broad St., Boston, and measures 50 ft. overall with an 11-ft. beam and a 2-ft. draft. The boat is so designed that the pilot can operate the motor and the deck hand can be used as a crew or the boat can be operated in emergency by one man, the engine being so located that it can be controlled from either the engine room or the pilot house.

She was designed especially for summer use and inasmuch as she is expected to go South during the winter, careful attention has been given to ventilating the quarters forward and the engine room by a large skylight, hatch, cowls, and port lights.

This craft will have a comfortable seating capacity of 75 passengers, although by the use of camp chairs, the number could safely be raised to about 150 persons. The passenger space is ordinarily open at the sides, though covered by a roof, and curtains are supplied which can be let down and made tight in a storm. Two toilets are provided, a large pilot house and a good engine room and forecastle.

The boat is designed particularly with the idea of being seaworthy and she has a great deal of stability with her high bow and forward deck to prevent rolling. The stern is of the usual overhung elliptical type which is best adapted to passenger service and the hull is very strongly built with an oak keel and framing and yellow pine planking.

The motor is a 40-50 horsepower, heavy duty, four-cycle engine turning a large propeller and the boat will be provided with a power pump, whistle outfit, electric lights, searchlight and all the necessary auxiliary machinery. The speed is about 11 miles an hour.



A type of boat which is rapidly superseding the small steamer. Such craft as these can be operated upon the inland lakes at small cost.

An Interesting 50-Foot Cruiser.

THE following page shows a 50-foot cruiser which has recently been designed by Swasey, Raymond & Page, Inc., of Boston, and built by the George Lawley & Son Corporation, of Neponset, Mass., for R. T. Crane, Jr., of Chicago.

As will be seen from the lines, the boat is intended principally for day cruising, although accommodations are provided below decks. The total waterline length is 44 ft. 6 in., the beam is 10 ft. 6 in., and the draft is 3 ft. 6 in. The frames are built of oak throughout and measure 1¾ by 2 inches, spaced 9 inches apart. The planking is of 1¼-in. pine and the interior finish is pine finished, white with mahogany trim. The decks are of white pine 1⅛ by 2½ inches.

The motor room, as will be noticed, is located amidships and a stack affords excellent ventilation. The power equipment will consist of a 25-horsepower, four-cylinder, four-cycle Standard motor complete with reverse gear. An electric lighting plant will be operated in connection with the motor.

The steering wheel and motor control are led to the bridge which is located just forward of the stack and aft of the companionway leading to the quarters. The fuel tanks are of 140-gallon capacity and are located in the engine room. The water tank has a capacity of 60 gallons.

A small galley is located upon the port side and a toilet is located in the extreme bow of the vessel. She was launched during the first part of May and her owner will use her upon the Great Lakes through the summer.

A Great Lakes Cruiser.

BELOW are shown the profile and plans of a 46-ft. cruiser built by the Matthews Boat Company, of Port Clinton, Ohio, for A. P. Brush, of Detroit. The beam of this boat is 10 feet and the draft is 3 feet and its construction embodies a number of ideas that are essential for a boat designed to be used upon the Great Lakes.

The keel is of the usual Matthews type and the planking is of white cedar, copper riveted. The exterior finish is of mahogany and the interior is mahogany with ceilings of chamfered cork white pine.

As will be noticed from the plans, the water tanks are installed forward of a double thickness watertight bulkhead and just aft of this is a lavatory compartment. Plenty of locker and wardrobe space is provided and the main cabin is made in one large room, 12 ft. 9 in. in length. The berths on the port side are made with extension fronts, while those on the starboard side are permanent. When extended these make up about 34 inches in width. Light and ventilation is secured through port lights, windows and a skylight. A folding desk is placed on the after bulkhead and a sliding door opens into the motor room which is furnished on the port side as a galley.

The motive power consists of a 30-horsepower four-cylinder Ralaco engine, equipped with Bosch magneto and bridge control. The boat is operated entirely from the forward end of the cockpit where a raised bridge elevates the steersman so that a clear view ahead may be obtained. The cockpit is of the self-bailing type and is fitted with side seats. All the cushions have spring bases and genuine leather covering is used for those in the cockpit with velour for the main cabin. Wilton rugs in the cabin and inlaid linoleum with a small tile pattern throughout the rest of the boat give a very pleasing appearance.

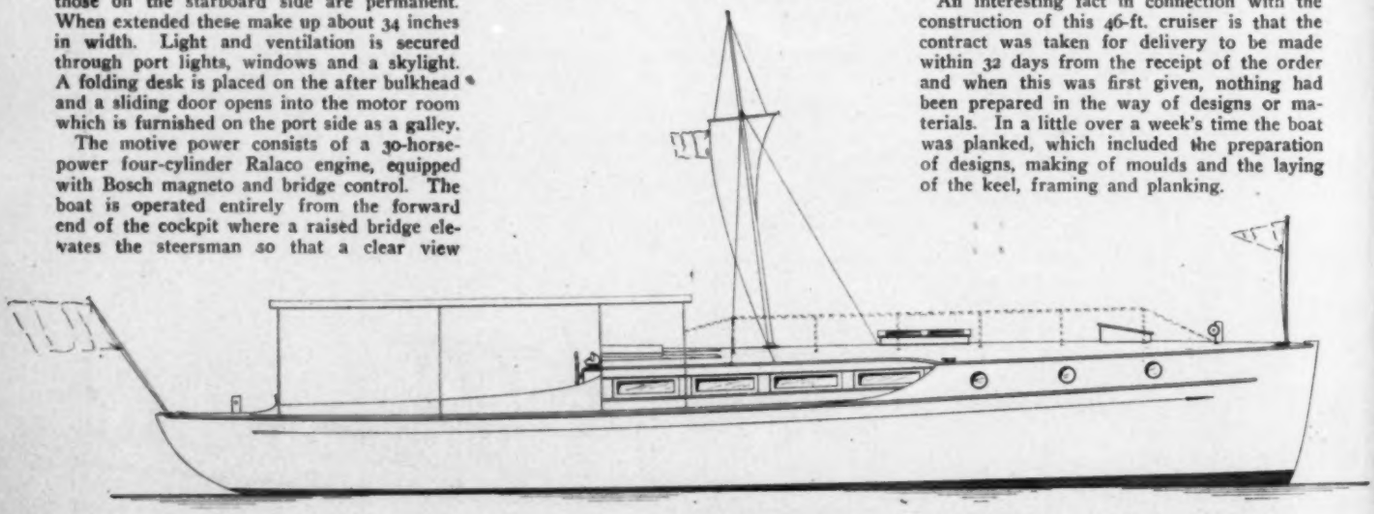
The gasoline capacity is 100 gallons, carried in heavy copper tanks, installed upon the starboard side.

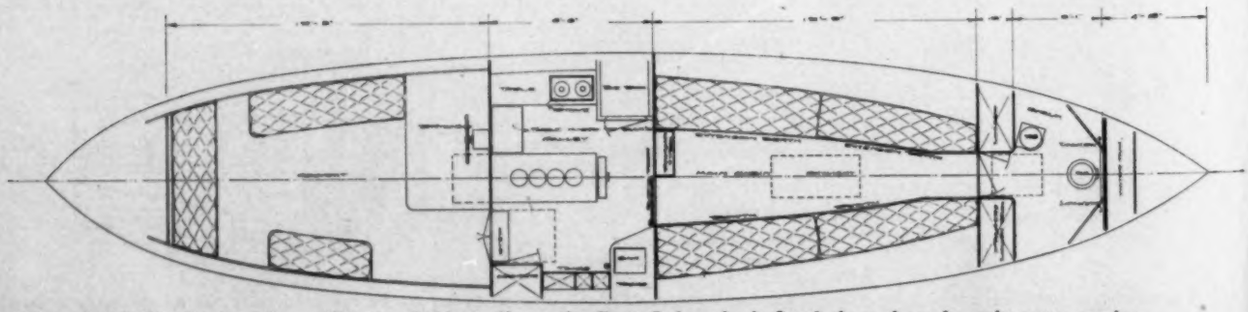
The general appearance of this boat shows the type which has proven very popular among yachtsmen upon the Great Lakes and the St. Lawrence River because of its serviceable construction and pleasing lines. The combination of raised deck and trunk cabin allows a very comfortable interior arrangement and at the same time permits much of the deck space to be used aside from the comfortable quarters aft in the cockpit. The usual type of awning is carried over the cockpit and storm curtains may be used when necessary. A signal mast set amidships adds to the trim appearance and also furnishes a place for the owner to fly his flag. A hand rail is extended along the raised part of the deck both for the sake of protection and appearance and the anchor chains and tackle may be placed well forward out of the way.

The boat is to be used in the neighborhood of Detroit and is expected to prove one of the finest small cruisers in that section. The Matthews company are building this year for Detroit owners four large cruisers, one of the largest of which is the 66-footer for Harry W. Kanouse, which was described in the May issue of this magazine.

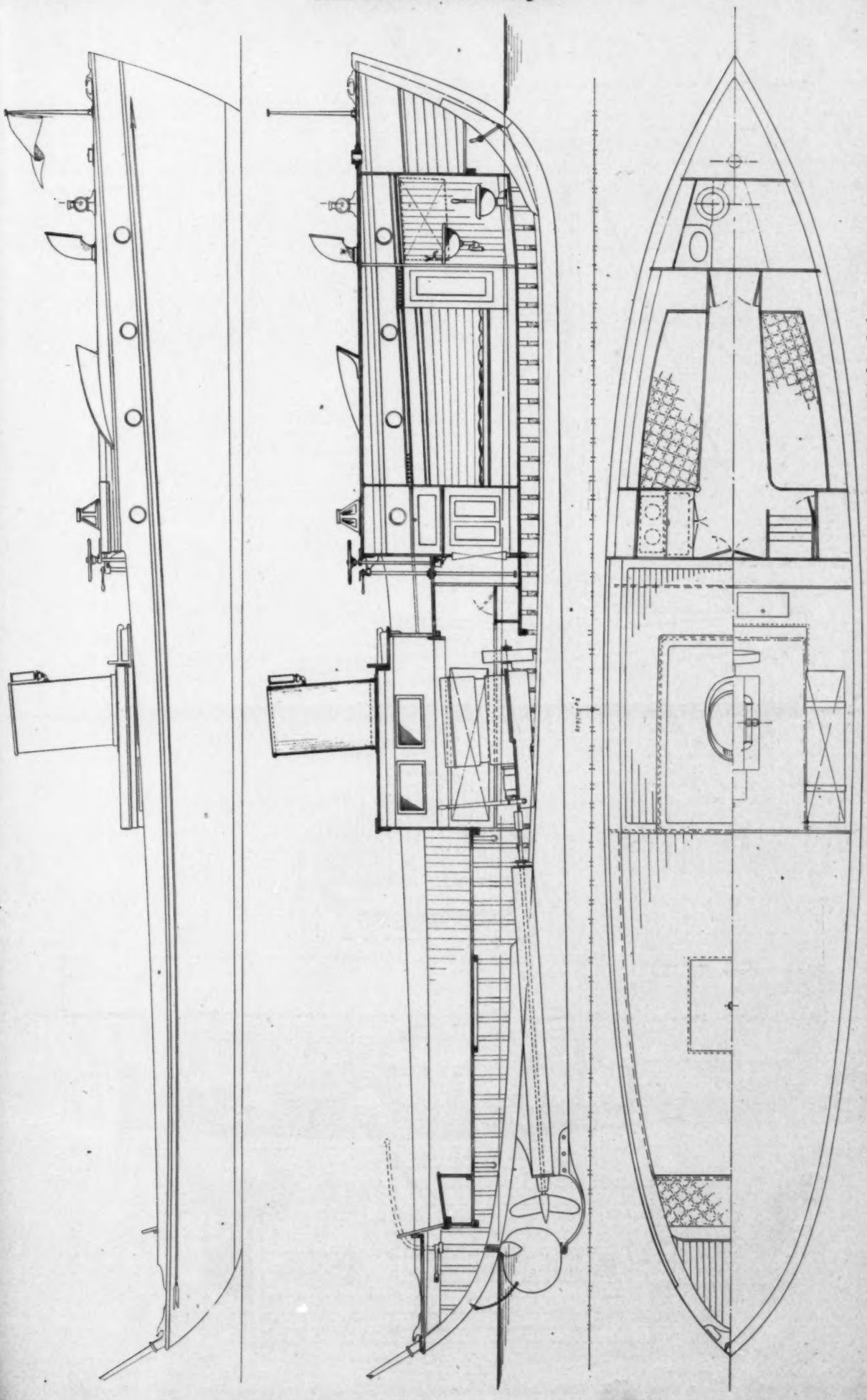
This is a sister vessel to the 66-footer built at the same time for M. B Grover, of Cleveland, Ohio, both of which are to be used upon the Great Lakes.

An interesting fact in connection with the construction of this 46-ft. cruiser is that the contract was taken for delivery to be made within 32 days from the receipt of the order and when this was first given, nothing had been prepared in the way of designs or materials. In a little over a week's time the boat was planked, which included the preparation of designs, making of moulds and the laying of the keel, framing and planking.

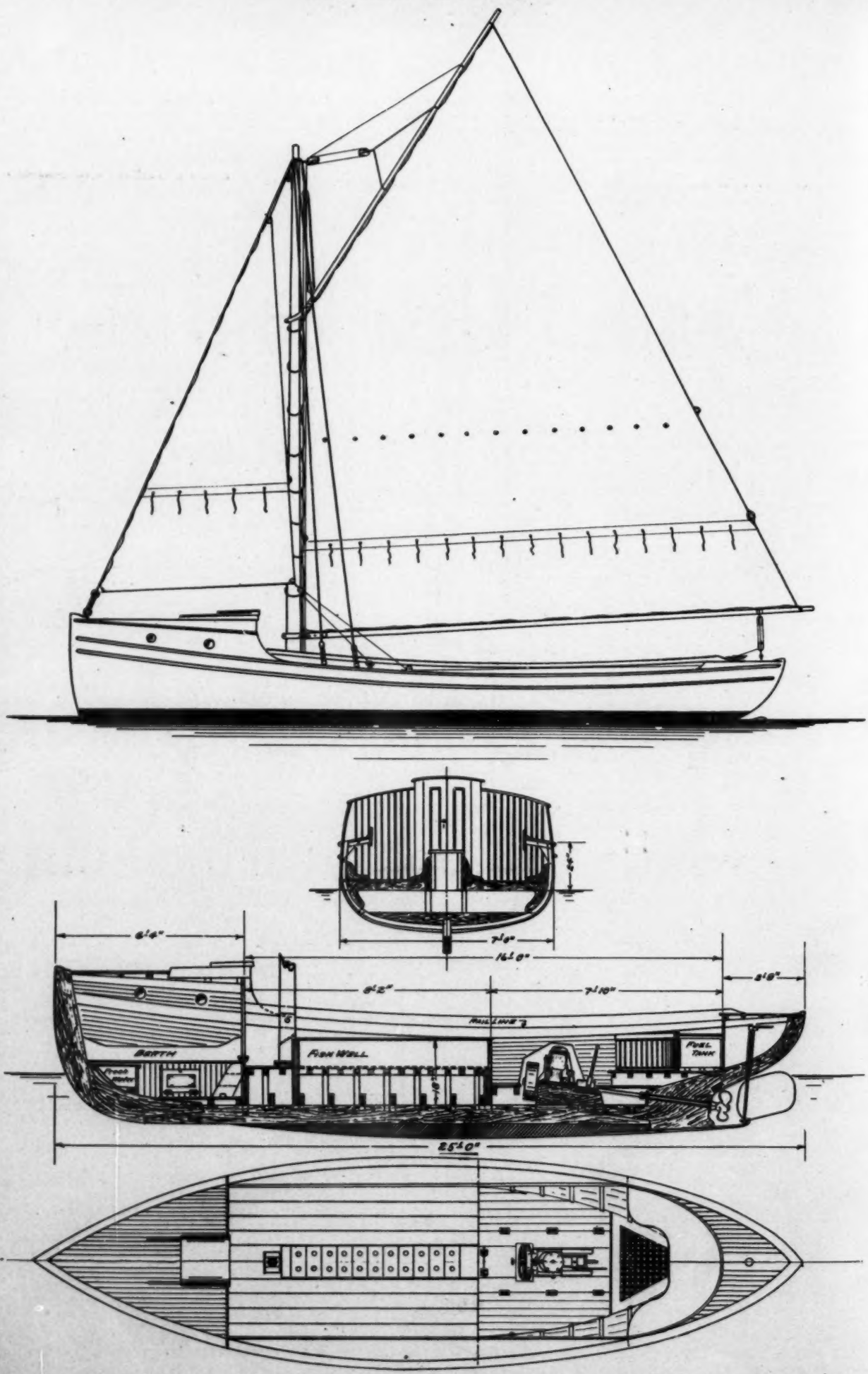




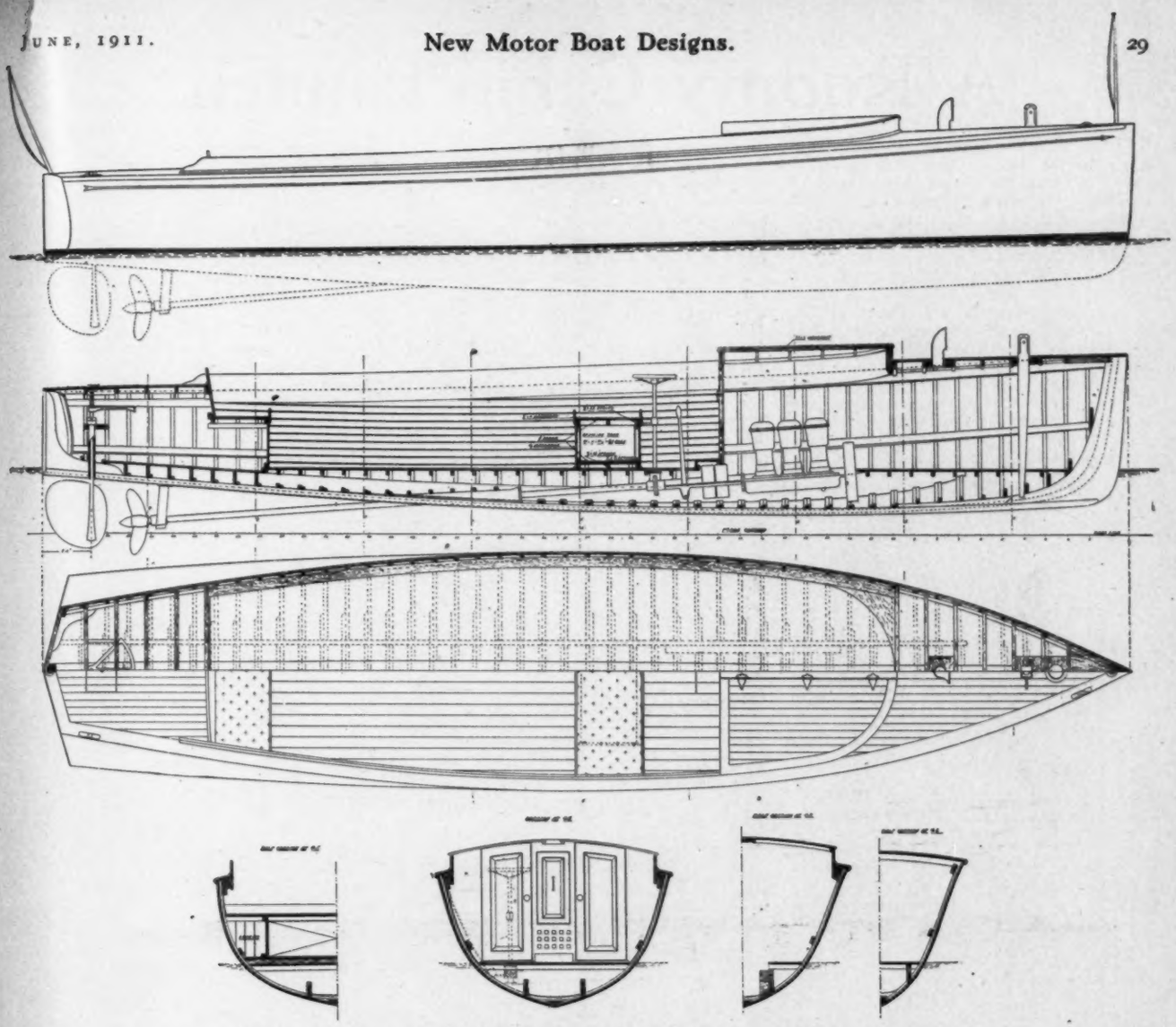
Although this Matthews cruiser will be used principally on the Great Lakes she is fitted throughout for salt water service.



This design by Swasey, Raymond & Page, Inc., shows an unusual amount of available room both above and below decks.



Although intended for a fishing boat, Mr. Nielson's design offers comfortable sleeping accommodations for two in the raised deck cabin.



The ample open space in this 25-foot runabout will make it a popular family craft.

A Twenty-Five Foot Runabout.

THE 25-foot runabout shown above has just been designed by Julius Peterson, of Nyack, N. Y., for C. Irving Wood. The boat has a beam of 5 feet 6 inches and is equipped with a 17 horse-power Ferro motor with complete outfit, including reverse gear. The tank is of galvanized iron of 25 gallons capacity.

The keel is of oak and the frames are of oak spaced 6 inches at the centers. The planking is of ⅝-inch cedar and all clamps and bilge stringers are of pine or oak. The transom is of ⅞-inch mahogany secured to the keel and clamps with oak knees and the flooring is of half-inch white pine with spruce floor beams. The deck, engine hatch, coaming and staving in the cockpit are of mahogany and the deck beams, engine hatch garlings, engine bed, and sampson post are of oak. Spruce is used in the filling pieces and the rudder is of 3/16-inch tobin bronze with a ¾-inch stock. The shaft log and strut are the product of the Glen Falls Mfg. Co. and the steering wheel, as shown, is of the automobile type, set vertical.

No plain iron or steel fastenings are used in any part of this boat, all being copper nails with heads countersunk, driven entirely through the planking and wood plugged. The hull is planed and sand-papered, caulked and puttied and given a priming coat inside and outside with three coats of flat white and two coats of copper paint outside.

An Auxiliary Built for Business.

ON the preceding page are shown the lines, accommodation plans, and deck plan with a sectional view of a 25-foot fishing boat, designed for a resident of Bay Ridge, Brooklyn, N. Y., by C. I. Nielson, of Brooklyn. The boat is sloop-rigged as shown upon the drawings and carries a 20-foot mast with a 13-foot gaff and a 19-foot main boom with a single reefed jib and a double reefed mainsail.

The craft has a beam of 7 feet and from the stem, running 6 feet 4 inches aft to a watertight bulkhead, the space is so arranged as to be utilized as a raised deck cabin with sleeping accommodations for two persons. Within the cabin are two stationary bunks with lockers under, a fresh water tank, a sliding hatch and door, and brass port lights.

From the watertight bulkhead aft to a distance of 8 feet 2 inches, the space is used as a fish well, extending the full width of the boat and 18 inches deep. This forms an absolutely watertight compartment and leaves aft of the well a space 7 feet 9 inches in length for the motor, nets, etc.

The engine and all gear are completely housed so that nets may be piled in all the available space without any danger of interfering with the action of the motor. A 4, 5½ or 7 horsepower, heavy duty, two-cycle make-and-break motor with reverse clutch can be installed at the option of the owner. As shown upon the accommodation plan the fuel tank is located at the extreme after portion of the motor cockpit where the gasoline can be fed by gravity to the engine.

The framing of this boat is of selected white oak with a keel measuring 8 by 3 inches running the full length. The weight of the iron shoe in the keel is about 450 lbs., so that the craft will possess a great amount of stability. The frames are 1½ inches square spaced 12 inches at the centers and the floor timbers are 2 inches in width. The bulkhead is built of 2-inch spruce and the deck clamps are of 1½ by 4-inch yellow pine. The planking is of cedar and the ceiling is of ⅞-inch yellow pine of tongue and groove construction. The general construction of this boat is for service of the most severe character and she will without doubt prove an exceptionally useful boat of her type. Her motor, though small, makes her practically independent of weather conditions at all seasons of the year.

A Roomy Cabin Launch.

THE cabin launch shown below was built by the Bayonne Launch Company, of Bayonne, N. J., for the Standard Oil Company. Her water line length is 37 ft., her beam is 10 ft. and her draft is 34 ins. As can be seen from the plan, this craft is designed for day cruising and is built for roominess and comfort rather than for speed. Her cabin affords a headroom of 6 feet 3 inches and her least freeboard is 32 inches, so that she will prove a useful boat in heavy weather.

The frames are of oak construction 1½ by 2¼ inches and the keel is of 4 by 6-inch oak. The ribs are spaced 10 inches at the centers and the planking is of 1¼-inch yellow pine above the water line and cedar below. The interior finish is quartered oak rubbed and the exterior finish is natural wood varnished. Sleeping accommodations may be provided for four persons on each side.

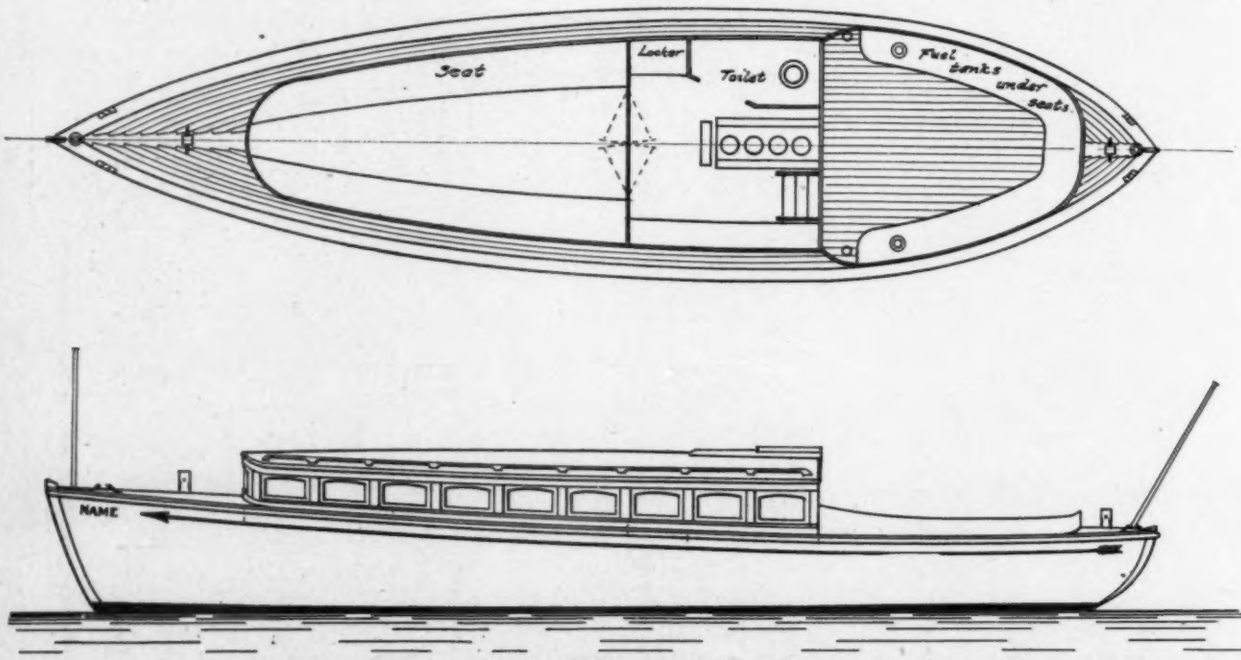
The decks are of oak 1⅛ inches in thickness, varnished. The motor is a 20 h. p. four cylinder, four cycle Doman, having a bore of 5 inches and a stroke of 6 inches, with jump spark ignition. The current is supplied from a magneto. The motor controls are located both in the cockpit and cabin and the boat may be steered from either location.

The capacity of the fuel tanks which are located under the seats in the cockpit is 100 gallons and a water tank located in the extreme bow furnishes a capacity of 50 gallons. A toilet is located on the starboard side of the motor room and locker space is provided just forward of this. The motor room is entered from the port side and swinging doors open from the forward end of the motor room into the cabin.

The propeller is a Doman with a 24-inch pitch and a 24-inch diameter and with this equipment the speed of the boat is about 10 miles per hour.

The length over all of this craft is 41 feet and she was designed by John C. Wolf, of East 36th Street and New York Bay, Bayonne, N. J.

She was launched upon April 22, 1911, and has been used during the spring by the Standard Oil Company, located at Bayonne. Since the boat can be controlled from inside when desired, rough weather does not interfere with her duties and the large enclosed cabin affords excellent protection against the wind and rain.



This boat is owned by the Standard Oil Company and is well arranged for day cruising.

A Fast Shoal Water Cruiser.

THE designs shown upon the opposite page illustrate a new type of fast cruiser designed for shoal water by Southmayd Hatch, of 1328 Broadway, New York City. This craft is 75 feet overall and has a 17-foot beam with a draft of 2 feet 9 inches.

The general appearance of the outboard profile gives an impression of speed, with large, light and airy accommodations. The bridge deck is located immediately above the engine room and complete control of the motors is given to the helmsman who has from this bridge an unobstructed view in all directions. For use in rough weather an auxiliary control is extended to the pilot house forward of the bridge deck.

Aft of the pilot house and directly underneath the bridge deck are the motors which are located in the forward part of the engine room. The motor room provides in addition to the engine stores, accommodation for one man.

Partitioned off from the motor room upon the starboard side is the galley opening into the passageway which leads aft to the main saloon. The galley is equipped with ample closet room and directly across the passage from this is an icebox of generous capacity. Just forward of the icebox is a large-sized locker for the use of the crew, and back of this upon the starboard side of the vessel and opening into the engine room is the crew's toilet.

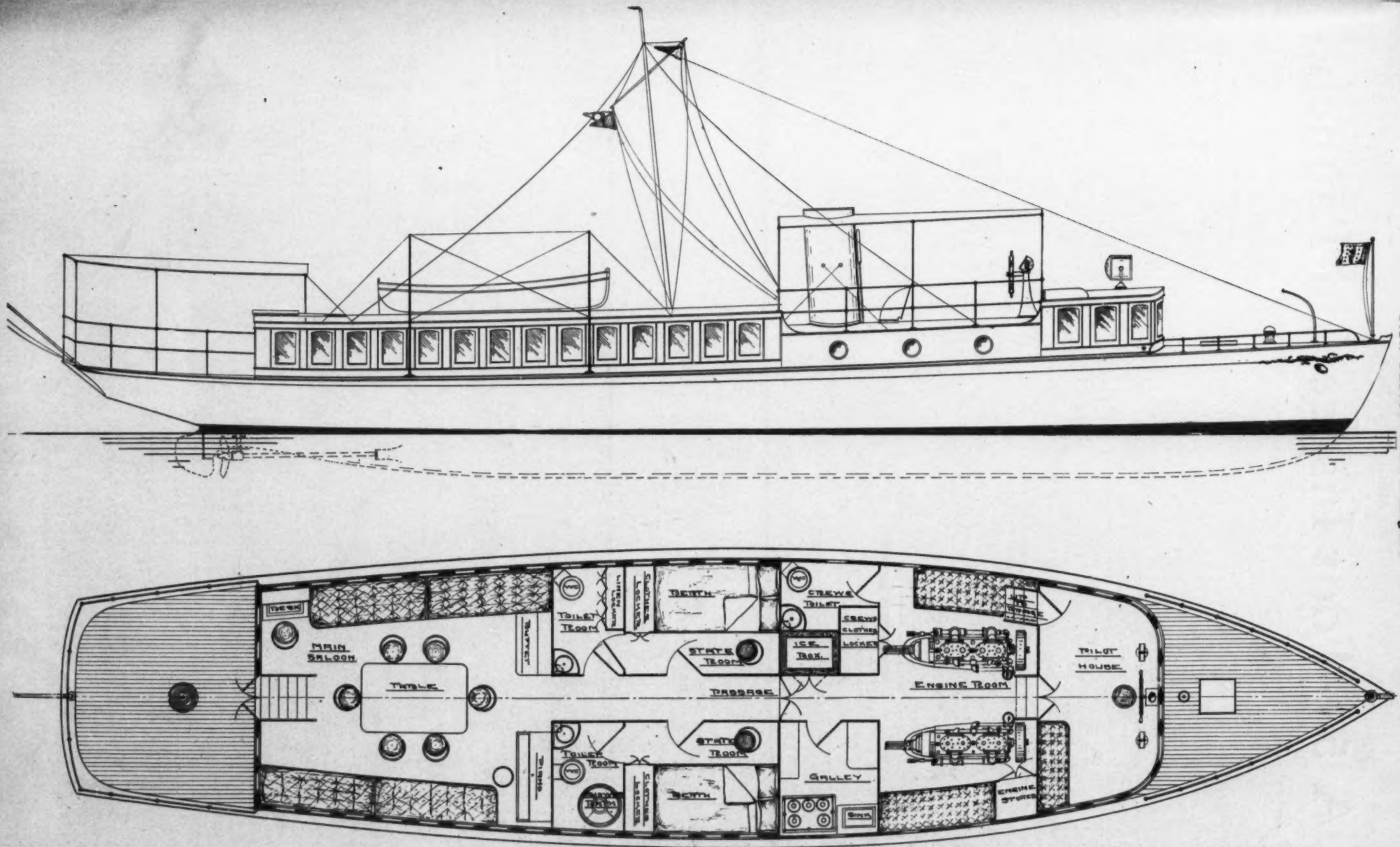
The midship section of the vessel is divided into two large staterooms, one on either side of the passage. The owner's stateroom connects with a private bath and a large clothes locker is located by the side of the bathroom. Across the passage is a guest's stateroom connected with a lavatory. This lavatory also has an entrance from the main passageway. Clothes lockers and a linen locker are provided to connect with this stateroom. Both of these staterooms are of the same size and are unusually large for a vessel of these dimensions. The shower bath in the owner's bathroom is an unusual feature.

The main saloon measures 16 ft. 6 in. by 13 ft. 6 in., and extends the full width of the boat at the end of the passageway amidships. This room was designed primarily as a living room, but is fitted with accommodations to sleep four persons very comfortably. Four Pullman berths are provided in addition to a dining table with six revolving chairs, a buffet, desk, and a piano.

As may be noticed from the profile sketch, light is furnished to the pilot house and to the entire after section of the yacht to the rear of the engine room through windows of ample size and which give to the boat the appearance of a trunk cabin design. A lifeboat is swung upon davits above the main saloon and the bridge deck is provided with an awning and stanchions which may be fitted with side curtains for use in stormy weather. The after deck is also fitted with an awning and furnishes a pleasant lounging place which is reached through a companionway from the main saloon.

Very good ventilation is secured to the engine room through a stack which creates considerable draft when the vessel is under way and through a cowl just forward of the stack. Three port lights are provided upon either side of the motor room.

Sufficient gasoline is carried forward under the deck between watertight bulkheads for a cruise of 400 miles at a speed of about 15 miles per hour. The two motors each develop 40 horsepower.



The interior arrangement of the shoal water cruiser described upon the preceding page shows a large amount of available space. The motors are located well forward and the entire midship and after sections of the boat are left free of all machinery.

A 54-Foot Inspection Launch.

THE designs of the vessel shown below are the outcome of rigid requirements drawn up by the department of public works of St. John, New Brunswick, of which Mr. J. Kimball Scammell is the resident engineer in charge. Mr. Scammell has for a number of years had charge of the extensive harbor work which has been carried on in that vicinity, and since the jurisdiction of his department includes not only the harbor works, but for 90 miles up the St. John River, an inspection launch is a necessity. The older boat had become unsuited to the duties imposed and the design of this new craft was put into the hands of Martin C. Erismann, a member of the firm of B. B. Crowninshield, of Boston.

The requirements called for a boat of good speed which could satisfactorily negotiate the tides and swift currents of that vicinity, and it was necessary to have a pilot house to afford full protection in rain and fog, with sleeping accommodations for one man. The engine room was required to be so located as to be accessible to the helmsman, so that in case of emergency the boat could be easily operated by one man.

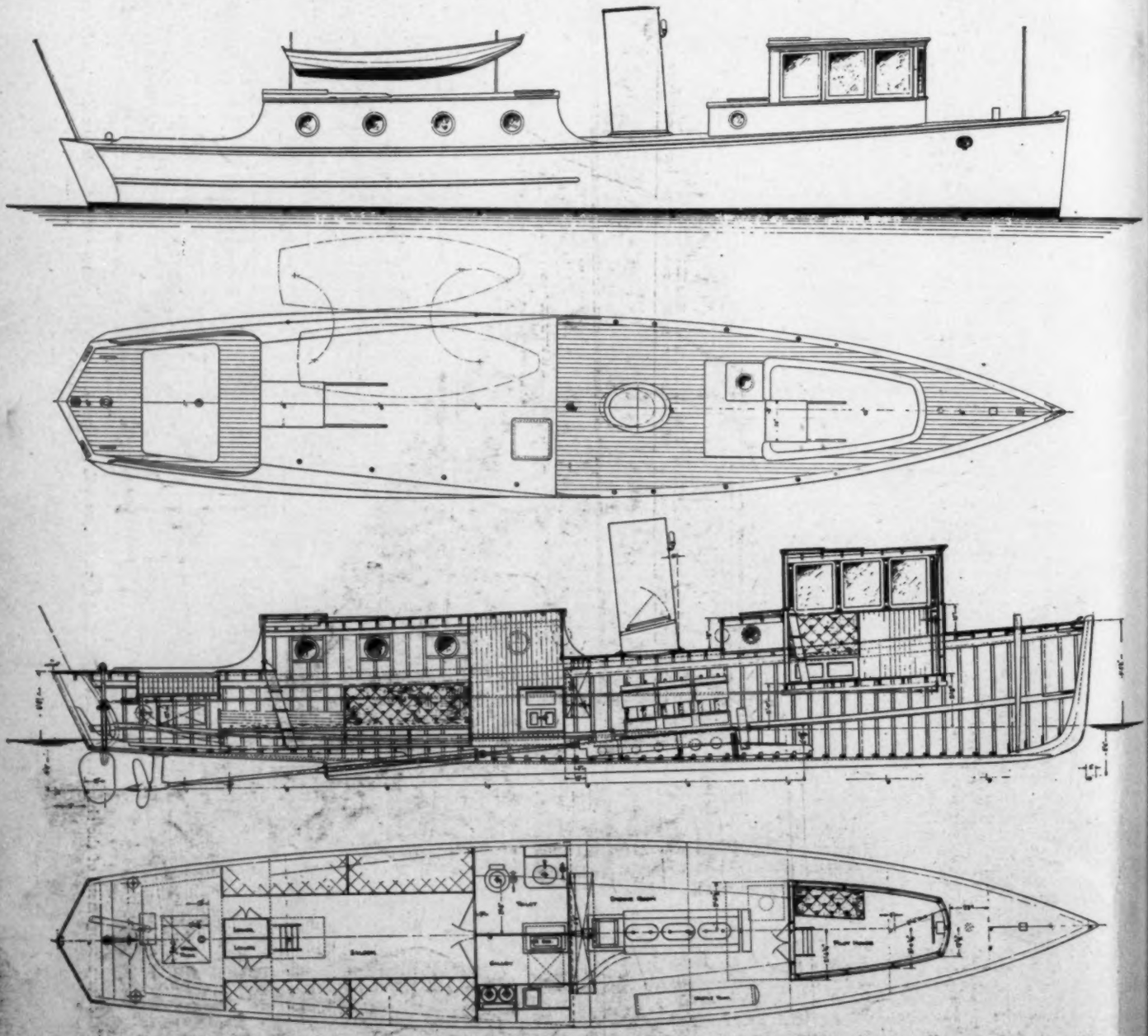
Sleeping accommodations for four are provided in connection with the after cabin and a toilet and galley are so arranged amidships as to be easily reached from the saloon. The galley is located upon the starboard side and an ice-box is placed in a convenient position.

A small cockpit is located aft of the saloon and every precaution has been taken to insure safety, seaworthiness and speed. A fresh water tank is located under the floor of this cockpit.

The vessel is 54 feet long over all with a waterline length of 52 feet, a beam of 9 feet 6 inches and a draft of 4 feet 3 inches. The construction shows lightness and strength and the design was ordered to develop a speed in excess of 12 miles per hour with a six-cylinder Standard motor of 40 to 50 horse power.

The engine room is located fairly well forward and is ventilated by a stack. A whistle tank is located upon the starboard side of the vessel next to the motor. Both the motor room and the saloon are ventilated by port lights and the pilot house forward is well lighted through windows upon all sides. A small dinghy is carried upon davits over the saloon.

The lines of this craft may seem a trifle odd at first glance, but it must be remembered that she is built for a special purpose and to fulfill a certain specified set of conditions. There is no deck space needed, but the quarters below decks were required to be comfortable and so fitted that no emergency might arise which could not be prepared for. There is nothing above decks that the water could injure and the space below can be so tightly fastened that waves could wash entirely over the vessel without doing any appreciable amount of damage. With the motors placed well forward and the center of gravity as low as possible she should be well able to weather any seas she might encounter.



The 54-foot launch designed by Martin Erismann is built along the lines of the British Admiralty pinnace and is constructed especially to negotiate swift currents and tides.

MOTOR BOATING ABROAD

How the Auxiliary Has Found Favor With British Yachtsmen in Preference to the Motor Yacht. Some Typical Examples of England's Rapidly Growing Fleet of this Type of Craft.

By J. Randell Wilson.

ACROSS the "herring-pond" the out and out power yacht has not been developed to the extent that it has been in America, although, of course, there are a large number of magnificent steam vessels ranging from 100 to 2,000 tons. The British yachtsman is fond of sailing under canvas with a good breeze behind him, but the sailing man has learned the value of the gasoline, or kerosene, motor for auxiliary work, and consequently, as a study of Lloyd's will show, there are a large number of sailing craft fitted with engines. At the present time there are about 400 auxiliary motor yachts, in addition to the vessels being converted, or built, for the 1911 season. It seems likely, from all reports, that the end of the year will show a total of about 1,000 semi-power vessels. In this respect there is an excellent opening to place American engines, which, by the way, are very popular among British owners, and one of the boats I am describing in this article has an engine from the States installed.

The largest English auxiliary, perhaps the biggest in the world, is the 400-ton barque, Modwena, owned by Mrs. Edgar Thornton, the owner of the famous hydroplane Columbine, which was described recently.

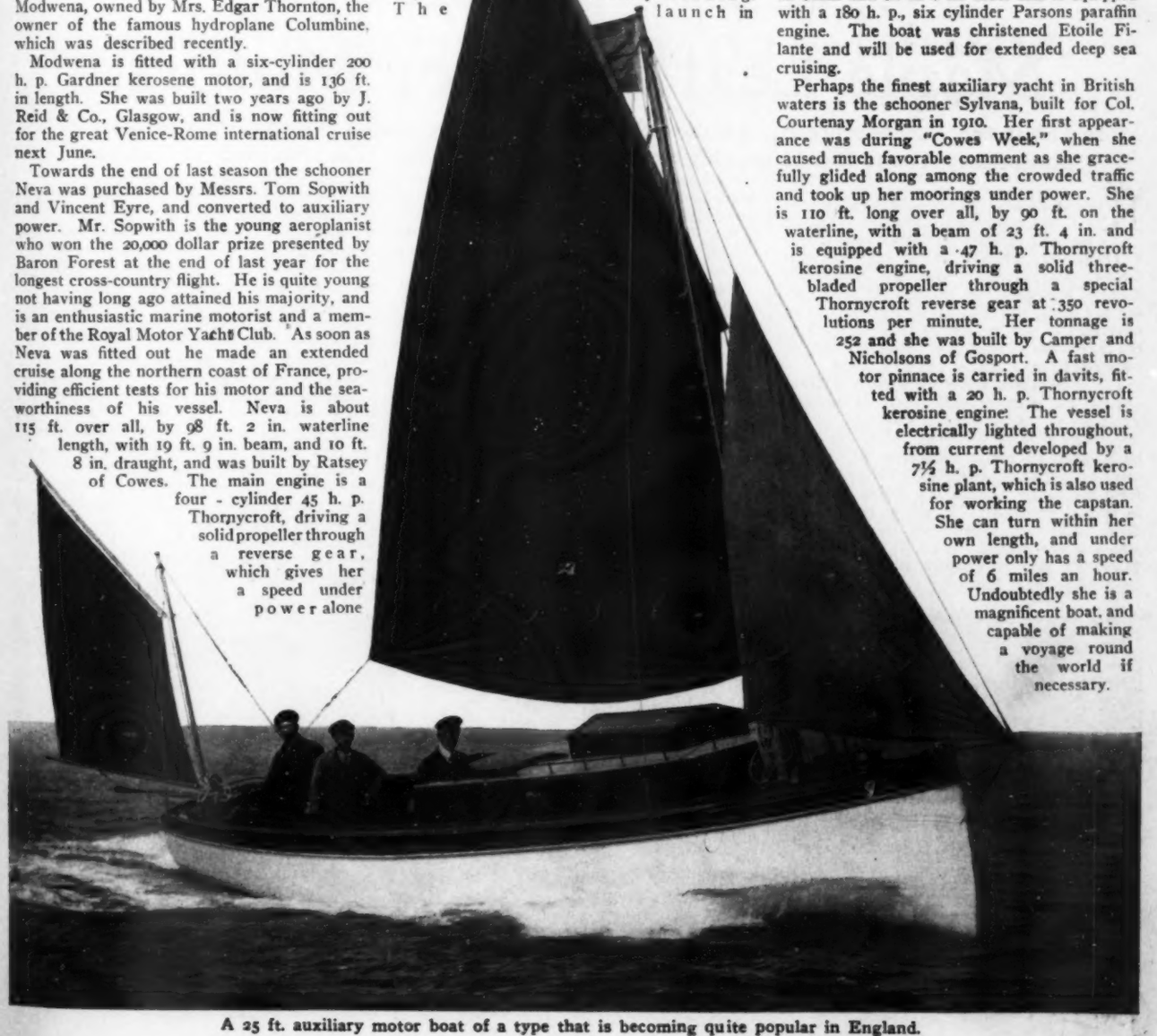
Modwena is fitted with a six-cylinder 200 h. p. Gardner kerosene motor, and is 136 ft. in length. She was built two years ago by J. Reid & Co., Glasgow, and is now fitting out for the great Venice-Rome international cruise next June.

Towards the end of last season the schooner Neva was purchased by Messrs. Tom Sopwith and Vincent Eyre, and converted to auxiliary power. Mr. Sopwith is the young aeroplanist who won the 20,000 dollar prize presented by Baron Forest at the end of last year for the longest cross-country flight. He is quite young not having long ago attained his majority, and is an enthusiastic marine motorist and a member of the Royal Motor Yacht Club. As soon as Neva was fitted out he made an extended cruise along the northern coast of France, providing efficient tests for his motor and the seaworthiness of his vessel. Neva is about 115 ft. over all, by 98 ft. 2 in. waterline length, with 19 ft. 9 in. beam, and 10 ft. 8 in. draught, and was built by Ratsey of Cowes. The main engine is a four-cylinder 45 h. p. Thornycroft, driving a solid propeller through a reverse gear, which gives her a speed under power alone of 8 miles per hour. In addition she carries three motor-boats, and one rowing-dinghy, on davits. One of the launches is his 100 H. P. racer Euphrates, ex-Mercedes IV, winner of the great Cross-Channel race in 1905. Her old engine has been taken out and replaced with a De Detrich, and she is as good as ever.

An entirely different type of boat, and one that is extremely popular among Corinthian yachting men of small means is the 25 ft. auxiliary cabin launch, which is shown below running under power and sail. She is a typical "week-ender," and is of a class used for cruising from port to port from Friday to Tuesday, which usually constitutes the Londoner's week-end. The busy city man is only too glad to enjoy sea life after a hard week's work, and this has proved to be an ideal boat for the man of moderate means. He can revel in yachting, yet be sure of getting to port, despite adverse tide or calms, in time to catch the early train to town on Monday or Tuesday morning. The launch in question is 25 ft. in length by 6 ft. 6 in. beam and 3 ft. 8 in. draught. She is built of mahogany, with oak stern, elm transom, elm timbers, and American elm keel. She is equipped with lug, foresail and mizzen, and generally speaking, she is a very healthy type of boat, well suited to stand the heavy weather often met with in the Thames estuary and English Channel. There is a coach roofed cabin, thirteen feet long from the stern to the bulkheads, containing sofa berths, cooking stove, table, etc. The after end of the cabin is really the engine room, which contains a twin-cylinder 12 h. p. two-cycle type "Mitcham" (Fay and Bowen) engine with magneto ignition, and reverse gears giving her a speed of about 10 miles an hour under power alone. She was built by the Mitcham Motor Co., Cowes, Isle of Wight, and is placed on the market at $1,250.

A remarkable schooner yacht has just been launched at the yard of the White Bros. at Southampton for M. Suling of Paris. She is a teak vessel 122 ft. 6 in. over all by 25 ft. beam and 12 ft. 6 in. draft and is equipped with a 180 h. p., six cylinder Parsons paraffin engine. The boat was christened Etoile Filante and will be used for extended deep sea cruising.

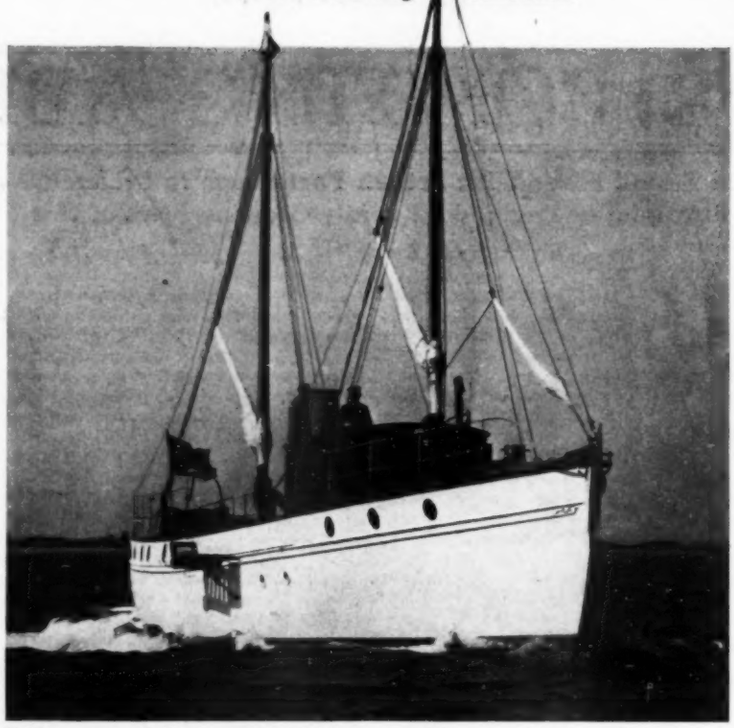
Perhaps the finest auxiliary yacht in British waters is the schooner Sylvana, built for Col. Courtenay Morgan in 1910. Her first appearance was during "Cowes Week," when she caused much favorable comment as she gracefully glided along among the crowded traffic and took up her moorings under power. She is 110 ft. long over all, by 90 ft. on the waterline, with a beam of 23 ft. 4 in. and is equipped with a 47 h. p. Thornycroft kerosine engine, driving a solid three-bladed propeller through a special Thornycroft reverse gear at 350 revolutions per minute. Her tonnage is 252 and she was built by Camper and Nicholsons of Gosport. A fast motor pinnace is carried in davits, fitted with a 20 h. p. Thornycroft kerosine engine. The vessel is electrically lighted throughout, from current developed by a 7½ h. p. Thornycroft kerosine plant, which is also used for working the capstan. She can turn within her own length, and under power only has a speed of 6 miles an hour. Undoubtedly she is a magnificent boat, and capable of making a voyage round the world if necessary.



A 25 ft. auxiliary motor boat of a type that is becoming quite popular in England.

Differing from the previously mentioned craft in that her sails are auxiliary to the motors, instead of the motor being auxiliary to the sails, is the 64-tonner Trident, built by Woodnut & Co., St. Helens, Isle of Wight, for Mr. A. Westmacott from his own designs. In many respects she resembles the American deep water cruiser, and is notable for her excellent accommodation arrangements. She has a length of 77 ft. by 13 ft. 10 in. beam, and 5 ft. 4 in. draught, and has plenty of free-board. There being very little superstructure she is a very steady boat in a blow. She is schooner rigged, the masts being carried in tabernacles; while the upper part of the funnel lifts off to allow her to pass under bridges when on inland waterways. In davits she carries an 8 h. p. 15 ft. motor tender, and a 13 ft. dinghy.

The engine-room contains three 40 h. p. Woodnutt kerosine engines driving triple screws. The cylinders have a 5½ in. bore by 6 in. stroke, and the power is developed at 700 revs. per minute. Under the full 120 h. p. a speed of 12½ miles per hour is maintained, and she can run 610 nautical miles under full power. With the port and starboard engines only in action she can maintain a speed of 10½ m. p. h. for 780 miles; but she can cruise for 1,240 miles with the centre engine only running. The latter motor also drives a dynamo, which charges storage accumulators for lighting the ship, electrical fittings being arranged throughout. All the exhausts are carried to a water-cooled silencer fixed in the funnel. The accommodations include a forecastle with accommodations for 4 men, a cabin for the captain, a ladies' cabin, owner's cabin, an extra stateroom and a main saloon with 7 feet headroom extension transoms, folding table, etc. As she uses kerosene, she is a very cheap boat to run, and has done much to forward the semi-power-yachting movement in Great Britain.



Trident, one of the larger British motor yachts on which the sails are auxiliary to the motors.

Maple Leaf and Her Motors.

More About the Thornycroft Forty-Footer Which is Credited With a Speed of Fifty-Seven Miles. Something About Her Lines and Her Motors and How She Was Disabled At Monaco.

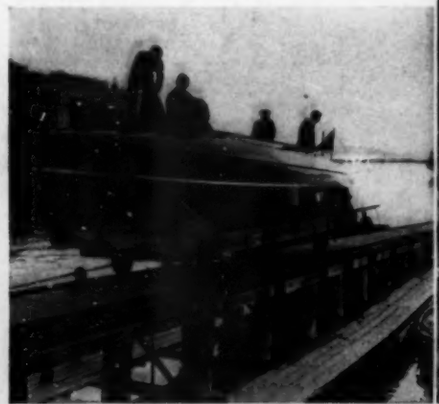
REGARDLESS of her mishap, Maple Leaf III was undoubtedly the most interesting boat at Monaco. Much heralded as a challenger for the British International Trophy and credited with the remarkable speed of something like 57 miles per hour during her trials, she is of peculiar interest to us over here as we impatiently look forward to the time when we shall have the opportunity of seeing her pitted against our own boats.

The photographs below were taken at Manaco and give a comprehensive idea of the boat. From the picture on the left some idea of her underbody may be obtained. While inspired by Miranda IV she is not merely an enlargement of the latter, as we were led to suppose from the earlier reports, but differs from her in several particulars. It will be noticed that there is a very pronounced step amidships which is the principal point of difference, as Miranda's step is scarcely noticeable. The hard bilge line forward and the gradually widening V-sections are characteristic features of Miranda, as is also the rounded bilge aft of the step. But at the stern again the difference is noticeable as at this point Maple Leaf resembles the usual displacement boat.

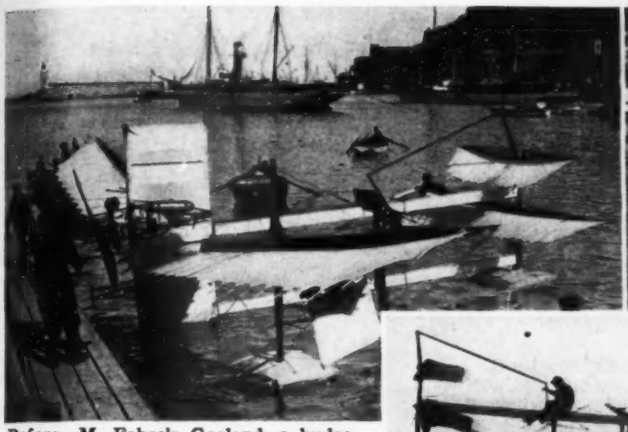
Her deck is interesting, being of the turtle type popular with the Thornycrofts. There is considerable flare to the top sides forward and the sheer line is clearly defined at this point. But continuing aft the tumble home of the sides gradually blends into the deck and the sheer line is lost entirely.

To strengthen the hull there is a longitudinal truss, a sort of lattice work girder, running the entire length of the hull and materially stiffening it. On either side of this and slightly forward of amidships her engines are installed and the starboard one is plainly shown in the middle picture. They are of the V-type and each is of 12 cylinders of 7 in. and 7½ in. bore and stroke, respectively. The valves are superposed, the intake being in the head and operated by overhead mechanism, with the exhaust immediately below. For the sake of accessibility the motors are installed in the cockpit or rather the cockpit is extended beyond the motors which are protected by a canvas cover supported on aluminum hoops and laced to a sort of grab rail at either side. The exhausts are water cooled, as is shown in the picture, and run aft side by side to the transom.

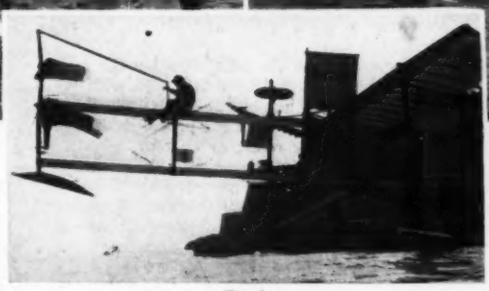
The power of Maple Leaf's motors is variously estimated at from 325 to 400 horse power apiece, but a fair figure seems to be about 350 horse power or 700 for the two. They were designed by Mr. W. E. Astell and were built by Dixon Bros. and Hutchinson, the builders of the hull.



Maple Leaf at Monaco. The photograph at the left gives some idea of her underbody, the middle one shows one of her 12-cylinder Thornycroft motors, and in the right hand one may be seen her strengthening truss.



Before—M. Fabre's Goeland, a hydro-aeroplane similar in construction to the Paulan monoplane.



During.

After—As she appeared shortly after the start—a characteristic view of this type of craft.

The accident to Maple Leaf was similar to that which befell Ursula. The bracket that supports both her starboard rudder and starboard propeller shaft gave way and left the propeller turning at the end of some ten feet of unsupported shaft. The whipping action that was set up allowed the propeller to tear a piece out of the hull and a quick application of canvas was all that saved her from sinking. The accidents to all three of the English boats at Monaco—Maple Leaf III, Ursula and Miranda IV—seem to have been due to the strains set up by running in rough water. But to preserve lightness and still obtain sufficient strength to withstand even the normal stresses due to the tremendous speeds with which these boats are credited is in itself a considerable feat of engineering and we shall therefore withhold any criticism with reference to seaworthiness.

An Interesting German Motor.

The New 150 Horse Power Daimler Marine Motor With Many Well Worked Out Features. Her Novel Method of Starting, Her Lubrication and Ignition Systems, Etc.

THE Daimler maripe motor shown at the bottom of the page has a capacity of 115 horse power and was designed and constructed at Marienfelds, near Berlin, Germany. The left hand photograph shows the inlet side and the right hand one the exhaust side of the motor which has four cylinders and operates at a speed of 800 revolutions per minute.

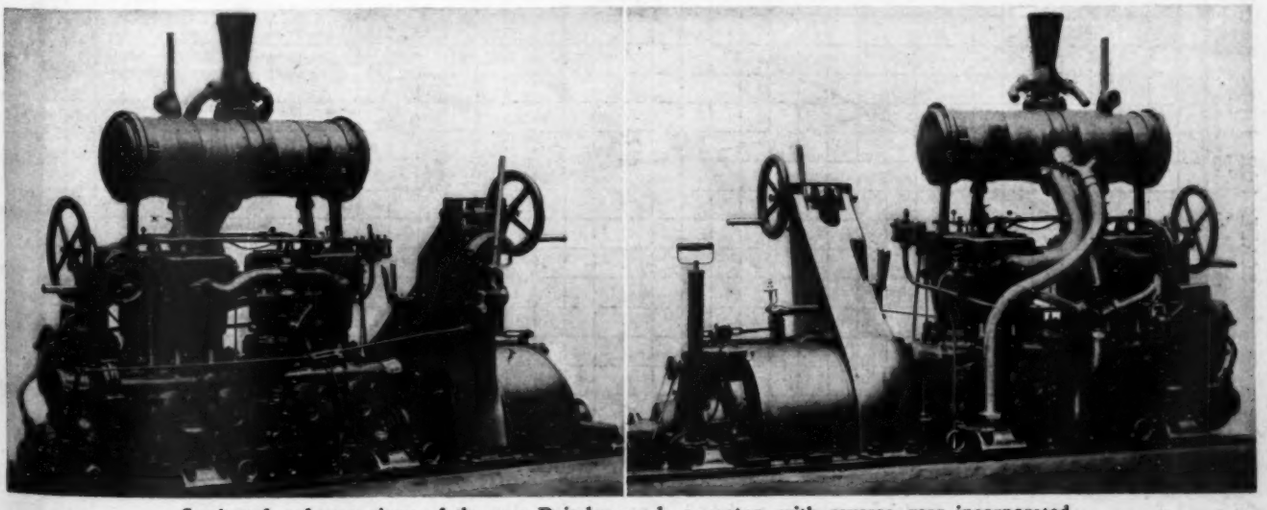
The Bosch magneto ignition system is utilized, the magneto being driven from the shaft by means of a transmission gear. It will be noted that the valves are arranged symmetrically, the inlet valve on one side and the outlet valves on the other side. The lubrication is effected by means of a piston pump driven by means of an eccentric, the casing of the pump being designed in one piece with the crank case. The pump forces the oil through the perforated crank shaft and main bearings to the parts to be lubricated and to the connecting rod bearings carrying it to cylinder and piston.

A mixture starting device is provided, the mixture pump sucking air and forcing the same through the carbureter passing it over the jet and thus filling two cylinders with the mixture. After slowly turning the motor over until the quantity and quality is sufficiently strong, a high tension spark is produced by a quick turn of the hand magneto apparatus, resulting in the ignition of the mixture in the cylinder. The motor is started in this manner and can then be adjusted for normal working.

The reverse of the smaller motors of the Daimler type is effected by means of cones. By the movement of a lever pushing a sleeve the cone is pressed into the fly-wheel and the propeller drives forward. If the sleeve is in the intermediate position the propeller is at rest and if in the counter direction the cone is fixed by a brake-ring for reverse driving. Motors of more than 50 horse power are arranged with a band reversing mechanism.

These German motors are operated with a carbureter having a vertical acting sleeve throttle which automatically varies the mixture for change of speed from slow to maximum. The operator may regulate the number of revolutions by means of the lever from 350 to 800 per minute.

A striking feature of many of the new French, German and English motors is the tendency toward what might be called "unit construction." It will be noticed that the engine, reverse gear, rear starting device and muffler are mounted as a compact unit which might be lifted out of the boat by merely loosening the shaft and water coupling and the foundation fastenings.



Starboard and port views of the new Daimler 115 h. p. motor, with reverse gear incorporated.

Choosing the Right Propeller.

A Simple Method of Calculating Propeller Dimensions From Data Obtained From Boat and Engine With Curves Based Upon Experiments Conducted in the United States Experimental Model Basin.

By W. H. Keith.

IN calculating the dimensions of a 3-bladed propeller to suit a given boat and engine, it is necessary to know, first, the horsepower of the engine; second, the number of revolutions at which it will develop this horsepower. The items are given in this order because it is generally customary for the prospective motor boat owner to determine his engine by its cost, and the next question is, how much speed the engine will give the boat.

The revolutions at which the engine will develop its horsepower should be accurately known. If it is assigned a greater power than it really develops at a given revolution the resulting propeller diameter will be too large, and the engine will be unable to turn up to the required number of revolutions. If the engine is under-rated, the propeller will be too small, and will turn too fast, resulting in churning. Both conditions cause loss in the speed of the boat. Some engine makers furnish results of brake tests upon their engines. This is the ideal solution of this question; otherwise a good guarantee should be required.

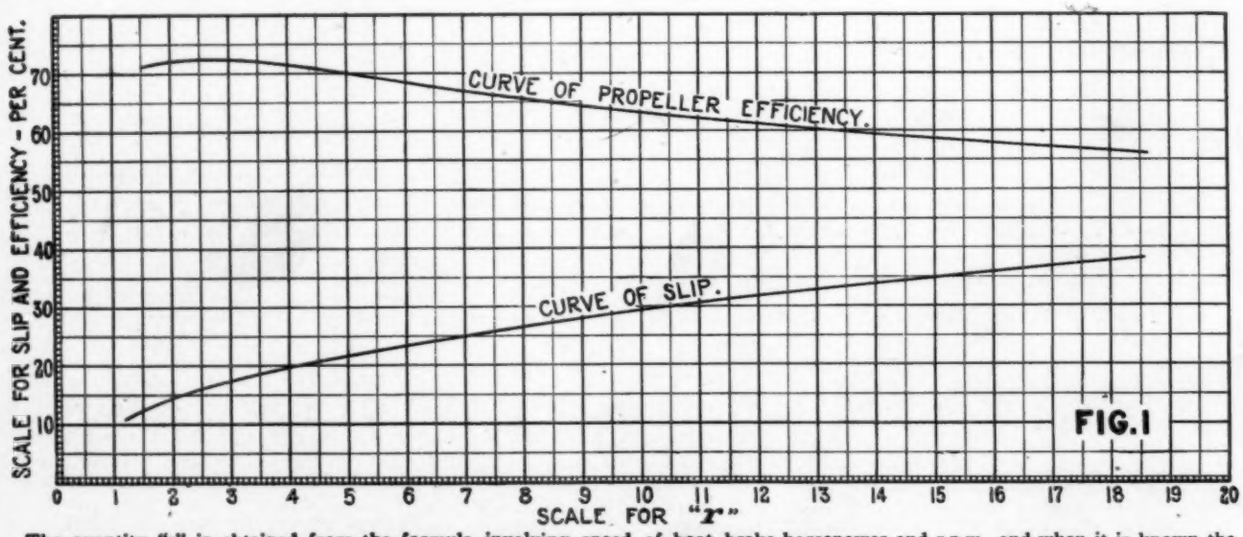
The speed which the boat should make with a given engine cannot be determined with accuracy, but as will be pointed out later, a fairly good estimate is sufficient for propeller design. For one thing, the wake, or current of water dragged along by the boat, causes the propeller to move through the water with a speed somewhat less than the speed of the boat. Properly speaking, the design of the propeller should be based upon this speed.

For the purpose of estimating speed a large number of approximate formulas have been published, and probably every designer has his own method based on the data of other boats. For those who have no such data at hand, the following will be found useful:

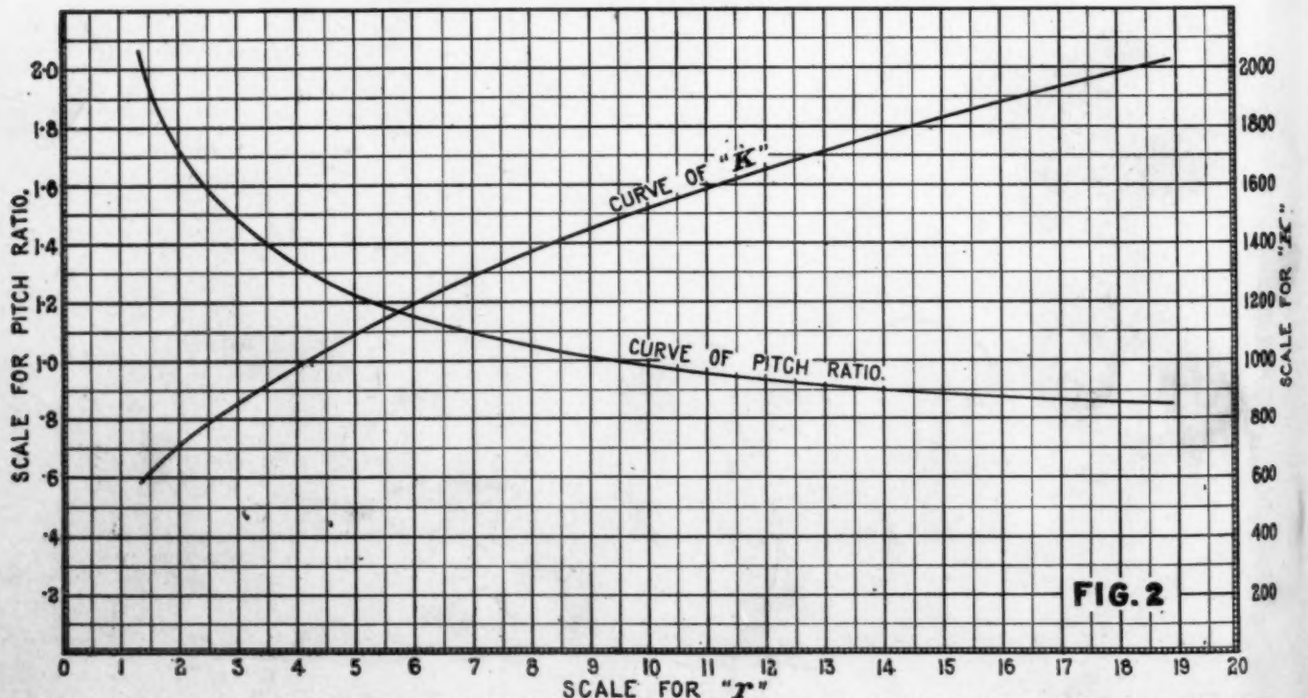
$$M = C\frac{\sqrt[3]{L \times P}}{B}, \qquad (1)$$

where M = speed of boat in miles per hour,
L = length over all in feet,
B = extreme beam in feet,
P = brake horsepower of engine (or engines),
C = a coefficient varying somewhat with the type of boat.

For cruisers having $\frac{L}{B}$ equal from 3 to 5,



The quantity "r" is obtained from the formula involving speed of boat, brake horsepower and r.p.m., and when it is known the "slip" and "efficiency" may be read from this table.



"K" and "pitch ratio" are read for the same value of "r." The propeller diameter is then obtained from "K" and the pitch from the diameter multiplied by the pitch ratio.

$C=9$ to 11; for runabouts, having $\frac{L}{B}$ equal from 5 to 7, $C=8$ to 10; while for high speed boat $C=8$ to 9. These values of C are apparently not very definite, but by writing formula (1) in the form

$$C=\frac{B\times M}{\sqrt[3]{L\times P}}$$

one can determine a number of values of C for himself from other boats similar in type to the one he is considering, and thus get a good idea as to what value to use. This can be done with other speed formulas, but as a rule, they involve displacement, upon which item there is not much available data. For unusual types of boats the speed should be estimated by several methods.

Having now the horsepower, revolutions and speed it is easy to determine the diameter and pitch of the propeller to suit the combination. In most cases these quantities are calculated from tables or diagrams involving troublesome interpolation, and guesswork as to their derivation.

The two diagrams given herewith are derived from a large series of experiments on propellers at the U. S. Experimental Model Basin at Washington, D. C. The results are published in "Speed and Power of Ships" by Naval Constructor C. W. Taylor, under whose supervision the author was fortunately situated for some years. By means of the diagrams the propeller showing the maximum efficiency for a given combination of horsepower, revolutions and speed is quickly determined.

It will be noticed that the curves given are plotted on "r." This is a mathematical quantity expressed by the formula

$$r=\frac{R}{M^3}\times\sqrt{\frac{P}{M}} \qquad (2)$$

where R = revolutions per minute,
M = speed of boat in miles per hour,
P = brake horsepower (on one shaft if there is more than one engine).

The coefficient "r" is simply a quantity which is constant for similar propellers working under corresponding conditions.

Having determined "r" for our boat, we note from Fig. 1 what to expect for the efficiency and slip of the propeller. This will tell us if our combination of power, revolutions and speed is a good one, and in a way, serves as a guide as to what the revolutions should be for a given horsepower of engine, as it is evident that when "r" has values from 1 to 5, the highest efficiency is obtained.

From Fig. 2 we now take off the values of "k" and "pitch ratio" directly over our calculated value of "r," and the diameter in inches will then be

$$d=K\frac{M}{R} \qquad (3)$$

where M = speed in miles per hour,
R = revolutions per minute.

The "pitch ratio" is the ratio of the pitch to the diameter, so that the pitch of the propeller will be its diameter multiplied by the pitch ratio.

The blade width for a given power, revolutions, and speed has not much effect on the efficiency of the propeller. The width may be about a quarter or a third of the diameter. The thickness of the blade where it joins the hub should be about 3 or 4 per cent. of the diameter; wider blades may be thinner, while narrow blades should be thicker for sufficient strength. The elliptical blade outline gives as good results as any, and the edges should be sharp, and the wheel well balanced.

As previously mentioned this method applies to three-bladed propellers. The design of two and four bladed wheels is slightly different, but a three bladed wheel is nearly always to be recommended. A two bladed wheel generally causes vibration, and a four bladed is not so efficient.

As an example of the design of a propeller, suppose the boat's length over all is 32 feet and the beam 8½ feet. The engine develops 9 horsepower at 450 revolutions. If we use $C=10$ in formula (1) the estimated speed will be:

$$M=10\times\frac{\sqrt[3]{L\times P}}{B}=10\times\frac{\sqrt[3]{32\times 9}}{8.5}$$

$=7.8$ miles per hour.

From formula (2) $r=\frac{450}{(7.8)^3}\times\sqrt{\frac{9}{7.8}}=7.9$

From Fig. 1 the slip is found to be 27 per cent., while the efficiency is 66 per cent., both being found vertically over $r=7.9$.

It is evident that if the revolutions had been lower, a higher propeller efficiency would have been obtained. From Fig. 2, we note that for $r=7.9$, the value for K is 1360 and the pitch ratio is 1.06. This gives for the diameter

$d=\frac{1360\times 7.8}{450}=23.6$ inches, while the pitch is

$23.6\times 1.06=25.0$ inches.

Suppose, now, that we had estimated our speed as 7.4 miles instead of 7.8, then "r" would equal 9.1 and K would equal 1450 and the pitch ratio would be 1.01. The diameter is then 23.8 inches, while the pitch is 24.1 inches. This is nearly the same as the previous solution, and in all probability a 23½ × 24½ wheel would be very satisfactory.

By the intelligent use of this method the average motor boat owner should experience no difficulty in choosing the propeller for his particular set of conditions. It has been kept as simple as is compatible with accurate results.

NOTE—Dividers are a help in taking off values from the curves, and a table of square and cube roots will be found very useful.

Two Cycle Facts and Fallacies.

The Possibilities of the Two-Stroke Motor—Something About Its Inherent Advantages. How the Principle Has Been Blamed for Faults that Should Be Charged to the Design.

By E. W. Roberts, M. E.

IT is strange, but true, that a statement made with reference to some mechanical subject will often gain credence no matter how slender the foundation of fact. Again a certain type of machine when first put upon the market may have grevious faults, which, although they are entirely overcome as it is improved with the advance of the art, still are held as a basis of prejudice against all machines of that general type.

In the early days of motor boating the two-cycle type of gasoline motor predominated. During the late nineties probably eighty per cent. of the marine motors in use were of the two-cycle type. Then came the advent of the automobile, and with it the gradual improvement of the four-cycle type to the neglect of the two-cycle. This was not because of any inherent fault of the type, but for the reason that the French, from whom much of our early motor car practice was copied, knew little or nothing of the two-cycle.

One of the first faults found with the two-cycle was that it was hard to start. True, a great many of the earlier motors were hard starters, and a few today have this fault. But if the designer of the motor knows his business, the two-cycle, in the hands of one who understands it, is no harder to start, than the four-cycle.

Hard starting on any motor can generally be traced to one of three causes. The first and most frequent is a poorly designed carbureter, which has too large an initial air intake to pick up the gasoline at the low speed of hand turning. The second is a weak battery or a spark of low tension due to a poorly adjusted coil or one that is otherwise out of order. Starting is always more difficult with a non-vibrating coil than with a vibrating coil. The reason is that it is difficult to get a perfect mixture in the cylinder, especially when about to start a cold motor. The cumulative effect of the vibrator spark will ignite a mixture upon which the spark from a non-vibrator coil has absolutely no effect. The third cause is poor compression. Poor compression is most frequently due to poor piston rings. Oval or tapered cylinders, poorly fitted or misshapen pistons are also contributary causes, but they are seldom the product of a well equipped modern factory.

There are other minor contributory causes, but they are mostly due to poor port design, which is to be expected from the hands of an inexperienced designer.

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POOR economy is a fault more frequently laid at the door of the two-cycle than any other and we must admit that this complaint is well founded. At full load a great many two-cycle motors will show a fuel economy nearly or fully as good as that of the four-cycle, but the moment they are throttled down, the fuel waste begins. Even this fault, however, has been overcome in some recent designs as I will show.

While every mechanical engineer knows that there is a certain load at which fuel economy is greater than at loads below it, it is not generally understood even by many of our best mechanics. This is because of the friction load for one thing, especially with reference to the fuel economy as based on the brake or delivered horsepower. Assuming that the mechanical efficiency of any motor is 80%, and taking for example a motor of 20 H. P., delivered; then the indicated horsepower would be 25. While at the same speed the friction will vary somewhat according to the power developed, we may assume for the purpose of comparison that the friction load is constant at 5 H. P. Assuming for the moment that the fuel consumption of the motor is the same per I. H. P. hour regardless of the load say .1 gallon, there will be a constant demand of .5 gallon to take care of the friction alone. Then, if the motor were developing, let us say, 5 B. H. P. the indicated H. P. would be 10 and the fuel consumption .2 gallon per B. H. P. hour.

As a matter of fact, the fuel consumption in any motor increases slightly per I. H. P. hour as the load falls below the normal, and this will make the fuel consumption at small fractions of the full load appear out of all reason to the tyro.

Now, as to the comparative fuel economy of the two and the four-cycle types at low or partial loads, I will first show wherein faulty design, especially in the three-port two-cycle, has much to do with fuel waste. The first aim of the designer, especially of a marine motor, is to secure all the power he can at full load. He will therefore make the intake port to the crankcase so long in the direction of piston travel that at low speeds the port

does not close soon enough to trap all of the mixture drawn in and part of it escapes through the carbureter carrying with it such gasoline as is mixed with it.

A further error in design is to have the exhaust port of the motor open too soon allowing pressure to be wasted that might be used in driving the piston. Another fault lies in opening the port leading to the bypass too early, and permitting some of the mixture from the base escaping through the exhaust before the piston closes it.

* * *

ONE of the great objections to the two-cycle has been the tendency of the mixture to take fire in the base before it reaches the cylinder. This is due to the flame from the spent gas in the cylinder rushing downward through the bypass, or the entering mixture taking fire in the cylinder, and the flame following down the stream of gas until it reaches the contents of the base. Base explosions occur ordinarily with weak mixtures or when the motor is slowed down. To overcome the backfiring it is customary for the operator to open the needle valve making the mixture as rich as will explode. The reason for a base explosion with a weak mixture is that the period of inflammation, from the time the spark occurs until the entire mass of the charge has been fired, is longer when the mixture is weak, and the flame hangs on until the intake port from bypass has been uncovered by the piston. Late ignition gives the same effect with a normal mixture, because the end of the inflammation period is later on account of having a late start. Slowing down by throttling the charge, gives a weak mixture because more of the burned gas from a previous explosion will remain and mix with the new charge attenuating it. Enriching the mixture is a palliative but not always a specific, as it does not always overcome base explosions. At the best it is like making one mistake to overcome another.

Naturally the way to overcome this trouble is to place something in way of the flame when it starts down the bypass, and at the same time allow the mixture to pass to the cylinder unobstructed. Many plans for accomplishing this have been tried, and the first thing that occurs to the ordinary designer is to keep the gasoline out of the base and have it enter the stream of air on its way to the cylinder. In pursuance of this idea we find carbureters and mixing valves in the bypass or connected with it, check valves in the bypass, and other plans of like nature.

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TO the engineer the principle of the miner's safety lamp is naturally the first thing that occurs as a possibility. Brayton in his oil engine of the two-stroke type with separate air-pump used the screen for this purpose as early as '76. The Brayton engine, however, operated on a different principle than the engine of today. Bnt few seem to realize the principle on which the screen prevents the flame from passing through. Many think it has a filtering effect, separating the flaming gas from that unignited in some mysterious manner. If a Davy lamp be held in a body of gas the interior of the screen fills with flame, but the gas is not set fire on the outside of the screen. Gradually, however, the screen will become hot and if the lamp is not removed in time the hot wire will ignite the gas on the outside. The flame is prevented from passing through the screen because the burning gas is cooled and the flame extinguished.

The screen used on the Davy lamp is very fine in mesh and the length of the passage very short, *i. e.*, the thickness of the wire. Screens placed in the bypass relieve backfiring but do not stop it absolutely. They are open to two objections, one the tendency to clog and the other their weakness which makes them liable to puncture. Weakness may be overcome to some extent by placing a backing of heavier perforated metal on each side of the screen, but this reduces the area of the opening considerably and does not overcome entirely the tendency to puncture.

Keeping in mind the short passage of the screen, suppose that the passage were larger and at the same time longer, so that, in its passage through, the flame is pretty sure to come in contact with the wall of the passage, it would be lowered in temperature and extinguished. Try this experiment. Get a piece of ordinary wire screen such as is used for strainers, and hold over the flame of a round burner. The flame will burn below but the gas on top of the screen will be "out." Touch a lighted match to the gas above the screen and it will burn. Start the gas and with the screen held over it, light the gas above it and the gas will not ignite below the screen.

Should you be able to secure a section of a honeycomb auto radiator, with a mesh about ¼ in. across and 4 in. through, hold that in the flame and the effect will be the same as with a screen. If a section of radiator is not available, use a bundle of small tubes or anything of this nature. Carrying the experiment further, it will be found that the longer the passage the larger may be the diameter. A device of this kind placed in the bypass of a two-cycle motor effectually prevents backfiring. The mesh and the length of the passage depends upon the size and the design of the motor but if about .1 in. mesh and 3½ in. to 4 in. long, it will answer for the average motor. Such a device has no tendency to clog, is easily cleaned if it does, and the most powerful explosion will not burst it. I have found that the reduction of area of the bypass due to its use has no appreciable effect on the power of the motor even when it occupies one-third the area.

This honeycomb structure not only presents backfiring, but increases the fuel economy by permitting the motor to be operated on a normal mixture at any speed, and by thoroughly vaporizing the gasoline in the mixture on its passage through the bypass. The heat of the cylinder is conducted to the bypass which remains at a temperature of 125° to 150° F. and the gasoline is not only preheated but the cohesion of the particles of liquid carried in suspension by the air is broken up so that the fuel enters the cylinder as a true vapor and thoroughly mixed with the air. The improvement in the mixture is shown by the fact that the compression must be reduced, when this device is used, or pre-ignition will occur.

Careful tests show that with this device in the bypass the economy of the two-cycle is greatly improved, and is fully equal to the four-cycle both at full load and partial loads. In fact by careful handling a better economy than that of the four-cycle motor is obtained.

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ANOTHER complaint regarding the performance of the two-cycle is that it will not run smoothly at low speeds. The complaint is justified when the performance of the average two cycle is considered. To design a motor for maximum power at high speed is one thing, and to design it to run without missing at low speed is another To combine both in the same motor "is several things." Yet this may be accomplished by designing the intake port to the crankcase to suit both conditions. The trouble with the motor designed for high speed is that at low speed the stream of gas rebounds through the port and the charge is erratic. I have seen a well designed two-cycle motor that would beat the four-cycle in running without missing at low speed, power at high speed and economy of fuel.

I have heard a great many four-cycle advocates say that a two-cycle motor would not show good power at low speed. I have seen just one two-cycle motor that had this fault. It was laid out by a guess-work designer and was an instance of poor guesswork.

* * *

THE greatest drawback to the development of the two-cycle has been the result of prejudice and poor engineering. Take for example a designer who has derived his experience on the four-cycle. He has been working to a great extent by "rule of thumb," a few tables which he has perhaps derived from experience and calculations based on the conditions found in four-cycle practice. He may be able to discourse wisely on areas of intake pipes, valve areas and valve settings. He may know the properties of alloy steels, factors of safety, and matters of that nature, and believes that the two-cycle is "so simple" he can easily, "lay one out" that will beat anything.

Look over his layout, and what may we expect to find? In the first place, his port areas are too small, perhaps. The piston will probably be short, so that the exhaust port is nearly open to the base when the piston is at the top of the stroke, or fancy curves appear on the top of the piston, the inside of the cylinder head or the deflecting plate. He conceives the notion that it spoils the lubricating properties of the oil to mix it with the gasoline in the base and fancy methods of oiling are shown. Or we may see intricate passages through the interior of the piston to "cool" it, a piston with the open end filled and just enough room left for the rod to increase the cranckcase compression, filling blocks on the crankwebs, built-up cranks, valves of all descriptions, etc., but not a lesson learned from other two-cycle designs.

It is just this type of "engineer" who falls down on two-cycle design and making a failure of it, condemns the type. Turn over the "junk-pile" of some of our well known builders of four-cycle motors, and I'll wager you'll find an experimental two-cycle in four-fifths of them. I speak from experience for I have, in my capacity as consulting engineer attended the funeral of quite a number, being called in at the eleventh hour when it was too late to save the patient.

About the worst case I ever saw, was at one of the first of these funerals I attended. The engine, a two-cylinder, two-cycle, was "the limit." The gasoline was injected against the deflecting plate by a pump of varying stroke, the speed being controlled by the amount of gasoline injected. The igniter was of the piston-break type and four inches in diameter, taking up the entire cylinder head as the motor was of 4 in. bore. The rods, no larger in section than they should be in steel, were of aluminum. Other features about the motor were along the same lines but I believe this will give you an idea of what the motor was like.

Unfortunately, the two-cycle has generally appealed to the tyro, and it is regretable but true, that many designs have been placed on the market nearly as poor as the one just described. Is it any wonder that the two-cycle has received a bad name?

* * *

I FIND one notion that keeps cropping up every little while with reference to the lubrication of a two-cycle. A few seem to have the idea that it is necessary to place a quantity of oil in the base of the engine to lubricate it and that it will stay in. They forget that there is a constant sweep of the mixture through the base which will soon carry all the oil up to the cylinder. Oil will not remain in the base and should be fed to the engine continuously. Many users do not realize the fact that the oil to the base must lubricate the piston, piston pin and crank-pin. Consequently they do not feed enough oil and have disastrous results. About the best and at the same time the simplest way to oil the cylinder and rod is to mix oil with the gasoline in the proportion of one pint of oil to four gallons of gasoline. One pint to five gallons is the proportion often used, but this is not sufficient on large motors. Mix the oil with the gasoline by stirring before placing in the tank, especially in cold weather. The oil is dissolved in the gasoline like sugar in water, and will not separate until it reaches the interior of the motor. I have known the entire motor, including the main bearings to be oiled successfully by this method, the pressure in the case driving the oil into the main bearings.

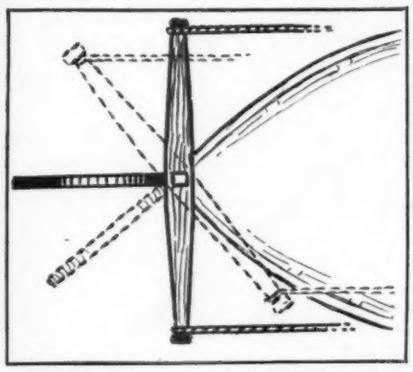
There are a great many things about the two-cycle motor yet to be learned, but a matter of even more importance is to have the public learn that in the later designs we have a motor fully equal and in some points superior to the four-cycle and one of much greater simplicity.

A Talk on Tillers.

How This Part of the Steering Equipment Should be Designed to Obtain the Best Results. Together With Something About the Installation of the Rudder Port and Its Stuffing Box.

By Harold Whiting Slauson.

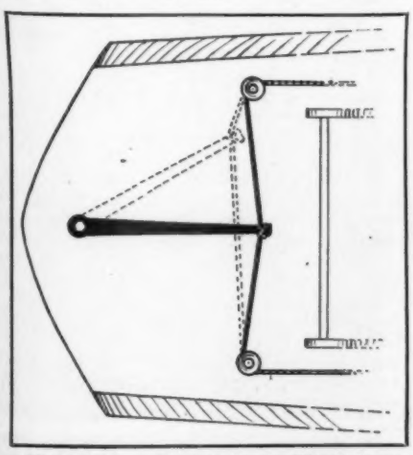
WHILE the tiller is, in itself, merely an iron rod or bar attached solidly to the upper end of the rudder post, its arrangement, form and the manner in which the chains are fastened to it constitute some



With this arrangement the lever arm decreases as the pressure of the water on the rudder increases.

of the most important features of the design of the steering gear. It is evident that a long tiller will move the rudder more easily and with less attendant strain on the steering ropes or chains than would be the case were a shorter tiller employed, but it must be remembered that this will also furnish a "gear reduction" that will make it necessary to move the steering wheel a proportionately greater amount before the boat will turn at its sharpest angle. By the "effective length" of the tiller is meant the distance between the rudder-post and the point at which the steering chains or ropes are applied, for any length of the tiller beyond this point has no effect either on the ease or quickness with which the rudder may be turned. The total length of the tiller should not be greater than necessary, for in the average medium-sized motor boat the space under the after deck in which the stern steering gear is generally installed is very valuable, and the longer sweep of this rod will reduce the carrying capacity of this compartment. As a rule, the ordinary tiller used with wheel steering does not need to be more than one-fourth or one-third longer than the length of the rudder.

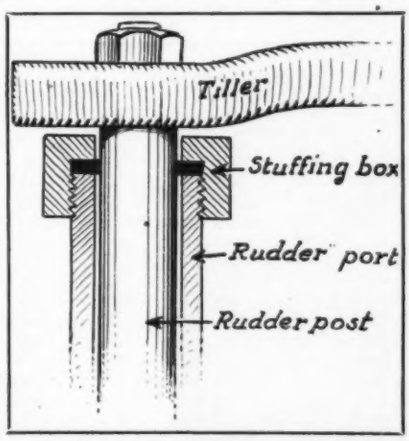
In some of the more elaborate forms of steering arrangements the tiller is often made in the shape of a sector of an iron wheel to



With this system it is impossible to keep a constant tension in the tiller lines.

the rim of which the two ends of the rudder rope are attached. One end will then wind up on the rim of this sector as the other unwinds, and this has the effect of keeping the same amount of tension in the steering line for all positions of the rudder in the same manner as though the stern chains were passed around a large drum attached to the rudder-post. Owing to the fact that the total swing of the rudder from one extreme position to the other should not be more than 90 degrees, a sector the size of one-quarter of a circle is sufficiently large.

If the chains are attached to the end of the ordinary bar type of tiller, it will be seen that the tension in the steering line will be different when the rudder is at neutral than will be the case when the tiller is moved to one side or the other. Furthermore, the angle at which the chain leaves the pulley block will be increased as the end of the tiller is swung, and while this may seem an unimportant consideration, the tendency to wear will be greater than would be the case were the pull even and in the same direction at all times. A simple method of overcoming this difficulty, however, and one which will give as constant tension as that furnished by the sector of the wheel, will be found in the use of

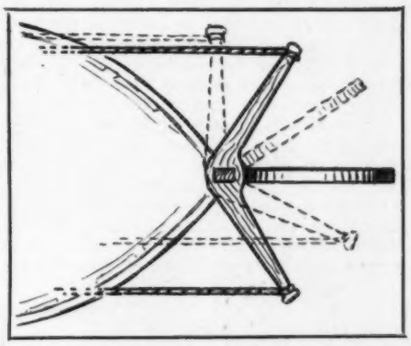


A stuffing box is usually required at the top of the rudder port.

a sliding sleeve to which the tiller chains may be attached. Instead of being fixed, then, the point at which the steering chains are attached to the tiller will be allowed to move toward the end as the rudder is turned in either direction and the tension will thus be equalized automatically.

This sleeve may consist merely of a section of gas pipe of the proper size to slide easily over the entire length of the tiller. The tiller should, of course, be round, smooth and of uniform diameter, and as a precaution, should have a nut on its outer end to prevent the sleeve from sliding off accidentally. Two iron rings should be fastened securely to this sleeve to provide points at which the end of the rudder chains may be attached. The stern blocks should be so placed that the sleeve will not slide quite to the end of the tiller when the latter is moved to either extreme position.

Small and inexpensive motor boats of the skiff and canoe type having a pointed stern to which the rudder is hung outboard require a different form of tiller from any of those described above. This consists of a cross-piece attached at its center to the upper end of the rudder-post and lying at right angles to the blade of the rudder. This eliminates the necessity of stern blocks around which the steering line must pass, for the rudder may be turned by a direct pull from the line of the keel on either end of this cross-tiller. If this cross-piece is perfectly straight, it will be

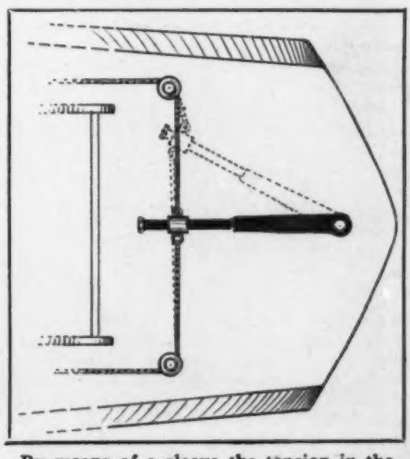


Here the length of the lever arm increases with the increase in the load.

seen that the greatest force will be applied to the rudder at the beginning of the turn, and that, as this angle increases, the power will be diminished proportionately on account of the reduction in the leverage. This is just the opposite of what should be the case, for the greatest power applied to the rudder is required when it is turned at its greatest angle. For small, slow-speed boats, sufficient control for all practical purposes may be obtained by the use of this straight tiller, but as a rule, the results will be found to warrant a slight change in this steering arrangement.

Instead of being straight, then, the best form of tiller for use on these small boats is one, each arm of which is bent back about 45 degrees. This forms a V-shaped tiller having its apex pointing forward and attached to the upper end of the rudder post. Inasmuch as the greatest force can be exerted on the rudder when the tiller arm is at right angles to the line of pull, it will be seen how this form of tiller transmits greater power to the rudder as the resistance of the water increases. In other words, when the boat is making the sharpest turn, the tiller is in the position giving the greatest leverage between the rudder and the steering line—and the power transmitted to the rudder *increases* as the tiller is moved out of its neutral position.

With the exception of these small boats having their rudders attached outboard, the tiller



By means of a sleeve the tension in the lines may be kept practically uniform.

and rudder in the majority of power craft are located under the after deck. This arrangement means that the vertical rudder-post must pass through the keel of the boat in order to transmit the power from the tiller to the rudder. This is generally done by passing a vertical tube or ordinary pipe through the keel of the boat and inserting the rudder post in it with the tiller swinging on the upper end. In order to make a watertight joint at the point at which the pipe enters the keel, the lower end of the former should be threaded and screwed tightly down into the wood for nearly its whole thickness. The rudder-post should be sufficiently long to allow the pipe through which it passes to extend within a few inches of the deck. This will then keep the rudder-lines and tiller in the same horizontal plane and will require fewer blocks and will give a more direct pull than would be the case if the steering ropes had to pass down in order to reach the tiller.

Even though the pipe should pass through six or eight inches of solid keel, it is necessary to brace its upper end. Although when first installed the pipe may seem rigid and secure, the continual strain of the rudder and tiller upon its unsupported upper end will finally loosen the threads in the wood and the entire arrangement will be rendered so unstable that it will be difficult to keep the boat in a straight course. The best and simplest form of support for the upper end of this pipe may be made by passing it through a hole of the proper size bored in a plank which is securely fastened to opposite sides of the hull near the tiller. This will form a very satisfactory brace, and if placed near enough to the deck, it will not occupy a great amount of valuable locker space.

Probably the average man would be surprised if he was told that the greatest care must be taken to insure a watertight joint between the rudder-post and the top of the pipe through which it passes. "Why," he will say, "the top of that pipe extends nearly two feet above the waterline outside of the boat—and doesn't water always seek its own level?" If he acts on this theory alone, however, and does not take proper precautions, he will find a couple of inches of water in his boat at the end of each day's run, and investigation will develop the fact that it has all poured in over the top of the rudder-port. This will not occur when the boat is at rest, for under these conditions the water has obeyed the law of physics and has sought its own level.

The cause of this peculiar action is not hard to explain when one realizes the conditions existing under the keel when the boat is travelling at full speed. The rudder-post sets up a considerable resistance to the passage of the water and causes a small stream to be shot upward, and this is helped by the action of the propeller in propelling a column of water sternward. This effect is also aided to a slight extent by capillary action and the result may be a stream extending six or eight inches above the surface of the water.

Another cause which will greatly increase this action is the settling of the stern when the boat is under way, which, of course, raises the waterline.

This action of the water at the rudder makes necessary the use of a stuffing box on the upper end of the rudder-post pipe. The rudder-post passes through this stuffing box and with this design in view, the upper end of the pipe should be threaded before installation in the hull. Candle wick and grease will form a satisfactory packing for use in the stuffing box, and as the wear of the rudder-post will not be great, this should not need to be renewed throughout the season.

This necessity for a stuffing box in the place where it probably would be considered of the least use is only another of the evidences of the attention to details that must be given to the design of an efficient and flexible steering system.

Knots Versus Miles.

An Explanation of the Difference in the Terms and the Popular Misuse of the Word Knot. With a Table Converting Knots and Miles Per Hour and Vice Versa.

IT is surprising how few people actually know the difference between knots and miles. This difference is not merely one of length; that is, not merely a difference between a land mile and a nautical mile. Most of our readers undoubtedly know this difference but that the definition involves time is not generally appreciated. In speaking of this subject our English contemporary says:

"A large number constantly speak of a knot as if it were 6,080 ft.—the length of a nautical mile. As a matter of fact a knot is, strictly speaking, a division of the old-fashioned log line, which bears the same proportion to a nautical mile as the time of the old sand glass does to an hour; consequently, to speak correctly, we may say that a vessel's speed is so many knots, but *not* so many knots *per hour*, as it is really knots per turn of the sand glass. However, the term knot has been corrupted in common speech, and is generally used as equivalent to a nautical mile; even such an authority as Mackrow, in the Naval Architects' Pocket Book, uses it in this manner, the heading of the table times and speed having the term 'knots per hour' in the sub-heading, while the following table for converting nautical miles to statute miles states that the 'knot' is 6,080 ft.; so we shall be erring in good company if we use the term knot in its generally-accepted sense as meaning one nautical mile.

"Perhaps the most important fact for everyone to bear in mind is that a knot is 6,080 ft., while a mile is only 5,280 ft.; in other words, the knot is almost exactly one mile and one-seventh, seven knots being equal to a very small fraction over eight miles (8.0606, to be exact); therefore, 10 knots are equal to 11½ miles, while 13 knots are nearly equal to 15 miles.

"Taking the proportion the other way round, we find two miles equal to a trifle less than a knot and three-quarters, 3½ miles to just over three knots, 7½ miles to 6½ knots, and so on, all of which boils down to the simple statement that the knot is just over 15½ per cent. longer than the mile. The accompanying table shows the proportions of miles and knots from 1 to 12 miles, taking a quarter-mile as the lowest fraction on the one hand and one-eighth knot as the lowest on the other:—

"It may be said that as these tables are not accurate, except in the case of 4¾ miles = 4⅛ knots and 9½ miles = 8¼ knots, they are merely misleading, and that the ordinary decimal table is better in every way, but the object of this form of table is not to give absolutely accurate results suitable for the use of marine engineers and naval architects, but to show the approximate differences in simple fractions which any non-technical man can readily understand at a glance.

"For instance, everyone can understand if we say that 4¼ knots is equal to 4⅞ miles, but if we say 4.25 knots is equal to 4.8939 miles, it is certainly more accurate, but it probably conveys absolutely nothing to the mind of the average fisherman. Therefore, I have sacrificed absolute accuracy in these tables, to be able to use simple terms and figures like one-quarter and one-eighth in place of .25 and .125.

"Another important point with reference to statements of speeds in miles or knots is that the average man has a very hazy idea as to either speed or distance, even between points in his own locality. Ask any local fisherman the distance from his home part to some place along the coast, and ten to one he will not be able to state it correctly either in miles or knots, and in the same way the real speed of a boat is seldom known unless she is in the hands of a man who understands the use of the log.

"Curiously enough, the distances along the coast are usually over-stated by the local men, while short distances inland are generally under-stated by the villagers. The speed of a tide, and still more that of a fairly fast vessel, are nearly always over-stated, and, as a natural consequence, a man, when ordering the engine for a new boat, generally asks for some speed which will cost too much to attain, simply because he has been told that a rival boat does so many knots, when, in all probability she does not do as many miles."

Miles vs. Knots.

Table of Miles Per Hour to Knots.			Table of Knots to Miles Per Hour.		
Miles.		Knots.	Knots.		Miles.
1	equals	⅞	1	equals	1⅛
1¼	"	1⅛	1¼	"	1⅜
1½	"	1¼	1½	"	1¾
1¾	"	1½	1¾	"	2
2	"	1¾	2	"	2¼
2¼	"	2	2¼	"	2⅝
2½	"	2⅛	2½	"	2⅞
2¾	"	2⅜	2¾	"	3⅛
3	"	2⅝	3	"	3½
3¼	"	2⅞	3¼	"	3¾
3½	"	3	3½	"	4
3¾	"	3¼	3¾	"	4⅜
4	"	3½	4	"	4⅝
4¼	"	3¾	4¼	"	4⅞
4½	"	3⅞	4½	"	5⅛
4¾	"	4⅛*	4¾	"	5¼
5	"	4⅜	5	"	5¾
5¼	"	4⅝	5¼	"	6
5½	"	4¾	5½	"	6⅜
5¾	"	5	5¾	"	6⅝
6	"	5¼	6	"	6⅞
6¼	"	5⅜	6¼	"	7¼
6½	"	5⅝	6½	"	7½
6¾	"	5⅞	6¾	"	7¾
7	"	6⅛	7	"	8
7¼	"	6¼	7¼	"	8⅜
7½	"	6½	7½	"	8⅝
7¾	"	6¾	7¾	"	8⅞
8	"	7	8	"	9¼
8¼	"	7⅛	8¼	"	9½*
8½	"	7⅜	8½	"	9¾
8¾	"	7⅝	8¾	"	10⅛
9	"	7⅞	9	"	10⅜
9¼	"	8	9¼	"	10⅝
9½	"	8¼*	9½	"	11
9¾	"	8½	9¾	"	11¼
10	"	8⅝	10	"	11½
10⅛	"	8⅞	10¼	"	11¾
10½	"	9⅛	10½	"	12⅛
10¾	"	9⅜	10¾	"	12⅜
11	"	9½	11	"	12⅝
11¼	"	9¾			
11½	"	10			
11¾	"	10¼			
12	"	10⅜			

The speeds marked * in the table are the only ones where the proportion between miles and knots works out exactly in eighths and quarters.

Figure 1.—The first strand unlaid.

Figure 3.—One strand tucked, the unused part to be trimmed off later.

Figure 2.—The strand is divided before tucking.

The Rope End.

A Method of Finishing the End of a Rope Which Is Much Superior to the Usual Whipping. One of the Sailors' Accomplishments That Will Be Useful to the Motor Boatman.

By W. E. Partridge.

THE usual way of finishing the end of a rope is to put a whipping on it. This does very well if it is well done, but it does sometimes pull off and the end of that rope is worse than its beginning. There is a very good method of splicing the strands into themselves which answers admirably for ropes whose ends do not have to be threaded through blocks. Even when it must go through a block it is possible to make an end of this kind small enough for the purpose. This method of finishing the end of a rope and the eye splice described in the March issue, will be found useful by the motor boatman who is particular about keeping his boat in ship-shape trim.

Although by no means necessary, the beginner will find that a marline spike is convenient in opening up the strands preparatory to tucking the other strands beneath them. A fid may be made from a piece of broom handle or other hard wood tapered to the shape of marline spike and will be found to answer the purpose fully as well as the latter.

For experimental purposes obtain a new piece of rope of about ½ in. in diameter as this size is most easily handled. Regular three strand Manila rope is best, although any rope from clothesline up may be used to practice with.

To finish the end of a rope by tucking the strands back into the rope itself the first step is to unlay one strand for five or six inches as in Figure 1. When one gains experience less rope may be used for the purpose. The beginner, however, will find it best to have plenty of spare rope. Separate this strand, taking out about one-third of the yarns; more if the end has to be very neat to thread through a block, bringing these yarns out on the under side, as in Figure 2, and bending them down out of the way. They will be cut off later. The remaining yarns of this strand, which we shall call No. 1, are turned over No. 2 and tucked under No. 3, as is shown in Figure III. Strand No. 2 is next untwisted, the proper number of yarns taken out and turned aside, and the remaining yarns turned over No. 3 and tucked under No. 1. Then the No. 3 strand is treated in the same way, going over No. 1 and being tucked under No. 2. They may each be tucked again full size, and the end of the rope will appear as in Figure IV. Each strand may be halved and tucked again. The ends may now be trimmed, but the ends of the strands themselves had better be left an inch or inch and a half long.

If a prettily tapered end is wanted something should be taken out of the strand at each tucking. When it is important not to have the end enlarged half of the strand may come out in the beginning. When in haste or when the size of the end is not important, the whole strands may be tucked all the way down.

As the strands are tucked they should be pulled tight, and when the job is finished it should be rolled under foot in order to make it round and compact as this gives it a finish difficult to obtain in any other way.

In Figure V are shown two different ends finished in this way, but different in the amount cut from the strands. The rope on left shows no taper, while the other shows a large rope with the end scarcely larger than the body of the rope. In this case rather more than half the yarns were left out when the strands were first turned back.

The reason for tucking before cutting off the strands to be left out is that the beginner can make a much neater job in this way and is fairly certain of working the ends to be cut off down into the rope out of sight.

This style of finish has a great advantage over any other with which we are acquainted, in giving an end of the same size as the rope that is perfectly secure against all kinds of hard service. It is also an advantage that it can be made with the fingers and a pocket knife, and at a pinch with the fingers alone, when the size is not important.

Figure 4.—As the end appears before trimming.

Figure 5.—The strands should be left proming.

Ollie has much the appearance of many other commercial craft.

Ollie--A Torpedo Lighter.

An Unpretentious, 56-Foot Motor Boat for Use on the Torpedo Proving Grounds in Noyac Bay. Her Motor, Her Torpedo Well and Other Features of Her Novel Construction.

TO all intents and purposes the lighter shown on this page is similar to many another commercial boat, but in reality she differs widely from this type of craft. Ollie is a torpedo lighter and is the only one of her kind thus far built. She was constructed by the Greenport Basin and Construction Co., for the E. W. Bliss Co., of Brooklyn, manufacturers of the Bliss-Leavitt Torpedo, and she will be used in connection with the activities of this firm at their proving grounds in Noyac Bay, about five miles from Greenport.

The Bliss Co.'s fleet at the proving grounds consists of a large steel floating machine shop and nearly a score of launches and rowboats. For the past five years they have been using an old sloop equipped with a Speedway engine, as a tender and water carrier, but this was entirely inadequate and so the present lighter was designed and constructed. The requirements were that she should be of sufficient size and displacement to carry a number of boxed torpedoes on deck, each weighing a ton, and at least 3,000 gallons of water. She was also to be equipped with a well or trunk 23 ft. long and 30 in. wide through which a cage carrying a torpedo gun could be lowered through her bottom for firing torpedoes.

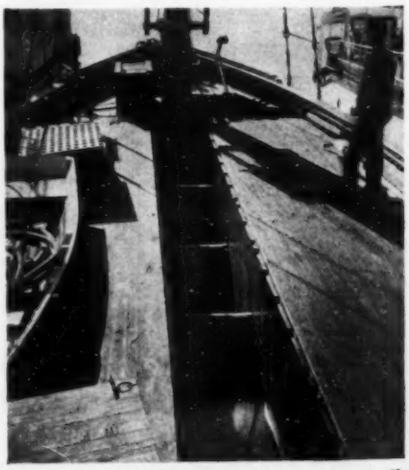
Ollie meets these requirements and is equipped with a 50 h. p. Wolverine engine weighing over 4,000 pounds complete. This is installed in the trunk cabin just abaft the torpedo well and forward of the pilot house. Her general dimensions are 56 ft. over all, 52 ft. 6 in. load water line, 18 ft. extreme beam and 5 ft. 6 in. draft. The well which is shown in the lower right-hand photograph may be covered with hatches flush with the deck, when not in use. The water tanks each of which holds 1,700 gallons, are situated forward of amidships and on either side of the well. They are connected to a steam pump in the engine room, steam for which is supplied from the floating machine shop into whose tanks the water is pumped.

The 50 h. p. Wolverine is a three cylinder motor of 9½ in. bore and 12 in. stroke. The spark and throttle controls and reverse lever are mounted beside the steering wheel in the pilot house so that the control and operation of the boat are in the hands of one man. A power hoister has recently been installed, connected with the engine fly-wheel by an auxiliary shaft and bevel gears. The lifting power of the arrangement is three tons.

Ollie has been in commission something over a month and has given complete satisfaction. The action of the water in the trunk at first caused some trouble by surging backward and forward, but notwithstanding this the boat made excellent time. It was suggested that swash plates be tried, but it was found that these were not effectual, and the final remedy was the introduction of a V-bottom in the well. This stoped the surging completely and two miles per hour were added to the speed.

Some idea of the substantial construction of the boat may be obtained from the following: The stem, keel, side keels and side shoes are all of 8 in. oak; the side keelsons and truck log are of 8 in. yellow pine; the frames are of white oak and chestnut, double sided, 3 ins. The floors are 3 in. white oak; the keelson is of 6 in. yellow pine and the engine bed keelsons are of the same size. The garboard planking and four strakes of wales are in 2 in. oak and the rest of the planking is of 1¾ in. pine, with the exception of the well, which is planked with 4 in. yellow pine, edge bolted. The deck planks are of 2 in. cypress in long lengths and the rails are of 2 in. oak. The other details of her construction are equally as substantial.

Her 50 h. p., three-cylinder Wolverine.



The torpedo well extends through her hull.

From Motor Boating Readers.

A Department for the Exchange of Ideas and the Discussion of Questions of General Interest. Editorial Opinion on a Number of Questions Submitted by Readers of the Magazine.

MoToR BoatinG's columns are open to its readers, not only for asking questions, but for placing before other readers ideas, results of experience, opinions, etc., that should be interesting or helpful to them; but the editor will not, of course, be responsible for any opinions expressed or statements made in such communications. The name and address of the writer must necessarily be given in every case to make an answer by mail possible (no anonymous contributions will be considered for publication), but names will be omitted in publishing the letter and answer where desired, in which case it is desirable that initials or other distinguishing signature be appended. Through the correspondence department readers of the magazine may be of direct aid to one another in solving the problems of motor boating.

Reducing Weight of Fly-Wheel.

To the Editor of Motor Boating, Sir:

I have an 18 ft. 6 in. runabout, 44 in. beam, draft of hull about 6 in. It is of very light construction and without motor, can be lifted by two men. The motor I am about to install is a two cylinder, four-cycle, horizontal opposed, 4 in. bore, 4 in. stroke. It is the fly-wheel of this motor I write about. It is 13⅝ in. in diameter. Hub 2⅝ in. wide, 2⅜ in. diam. Total weight of the wheel 58 lbs. This seems to me to be too heavy, and as I wish to keep the weight reduced as much as possible, I thought possibly I could machine off the inside of the rim, leaving the outside diameter as it is now. Please advise me if any of this flywheel weight can be spared without effecting the efficiency of the motor.

C. H. Graff, Marshall, Mich.

[We would not advise you to cut down materially on the weight of your fly-wheel. You might, however, start at the hub and trim off any unnecessary weight at this point and if the web is thicker than you consider necessary for strength, this might also be faced off to as low as three-eighths of an inch, or you might drill a number of holes through the web. As you suggest, you might also turn a little off the inside of the fly-wheel rim, but rather than take much weight off at this point, we would advise you, if you consider further saving of weight absolutely necessary, to have a new fly-wheel made of larger diameter, as a much lighter rim could be used with very little additional radius.—Ed.]

New York to Quebec.

To the Editor of Motor Boating, Sir:

This summer I am planning to take a trip up the Hudson and down Lake Champlain and the St. Lawrence to Quebec and return. Have you ever published an account of the trip from Lake Champlain to Quebec, or can you tell me where I can get full information. I have charts covering the route but would like to know more about it, especially the Richelieu Rapids which look fierce on the charts. Your help in this matter will very much oblige one of your subscribers.

Reginald S. Blake, New York City.

[For information regarding the route from New York to Quebec, we refer you to several articles published in Motor Boating, "New York to Lake Champlain," in the June, 1909, issue and "How to Get to the Thousand Islands," in the July, 1909, issue, cover the route from New York to the St. Lawrence River, and an article published in the May, 1909, issue, "Navigating the Upper Hudson," may also be of use to you.

In view of the possibility of your not having the July, 1909, issue on file the following paragraph will answer your question regarding the Richelieu River: "* * * the new part of this course begins at Rouse's Point at the north end of Lake Champlain where you cross the border line between the United States and Canada. Enter the Richelieu here and follow it north for 81 miles. Avoid the St. John rapids by taking the Chambly Canal for 12 miles, pass through a single lock at St. Ours, 30 miles north of Rouse's Point and you are at Sorel, a thriving French-Canadian town at the mouth of the Richelieu, where it enters the St. Lawrence."—Ed]

Does Tide Affect R.P.M.?

To the Editor of Motor Boating, Sir:

Having had a little argument concerning a motor boat, and not being able to come to any satisfactory conclusion, I would like to submit the question to you for a correct answer. The question is this: If a motor boat running in still water, suddenly starts to buck a tide or swift water, will the engine change speed (r. p. m.) or remain the same as it was while running the boat in still water, and why?

C. O. Freeman, North Vancouver, B. C.

[Theoretically there would be no change in the speed of your engine, for a boat strictly speaking does not "buck" a tide but retains its speed relative to the water no matter how fast or slow the water is traveling. In other words,

A Motor Boating enthusiast who frequently sends in suggestions.

it is carried along with the water in which it floats and its speed relative to the land is the result of adding or subtracting the speed of the water and that of the boat according to whether it is going with or against the tide. Practically, of course, there might be some change to speed due to local disturbance of the water caused by the eddies, etc.

If the water actually moved relative to the boat as when at anchor the load would be decreased when the water ran astern and vice versa and the engine would therefore change its speed accordingly.—Ed.]

Don't Forget the Wheel.

To the Editor of Motor Boating, Sir:

If motor boat owners in general would pay more attention to the propeller wheel, rudder, skeag iron, and all under water fittings, better and more satisfactory results would be obtained. Accidents to the wheel often occur and no attention is paid to it, as running aground, wheel striking some obstruction, etc. But as the wheel is hard to get at as a rule, chances are taken that no damage is done. What are the results. Boat not up to speed and fault attributed to engine or carburetor. The engine is dismantled, carburetor taken apart, everything is found O. K., but no better results. Better look at the wheel. The wheel is frequently found in bad shape, one blade badly bent out of pitch, out of balance, or shaft sprung, no wonder the boat is not up to speed. If you will give one-third of the attention to the under fittings that the engine gets, your trouble will be lessened a whote lot. "Out of sight, out of mind," is the general rule.

J. E. DeFreest, Troy, N. Y.

The Application of Marine Glue.

To the Editor of Motor Boating, Sir:

Will you kindly give me some information regarding the application of marine glue to deck seams. Never having had occasion to use it until recently, I want to be sure of my ground before going ahead.

"A. Builder," New Orleans, La.

[The following suggestions from the manufacturers of Jeffery's Patent Marine Glue, should make the process perfectly plain:

"When applying marine glue to seams of decks, etc., do not attempt to heat all the glue you expect to use at once; heat only what is necessary for immediate use, and as soon as it is half used out of the kettle, add fresh glue, keeping it stirred now and then. It should be used as soon as it is melted and not allowed to stand in the kettle. Continued boiling hardens and injures the glue.

"Almost without exception, unsatisfactory results in using this material are occasioned by faulty application and are produced entirely by two causes: First, if either the oakum or cotton caulking or the seam is damp when the glue is applied, as soon as the sun shines on the deck, the heat will turn this moisture into steam which will force the glue up over the edge of the seam. Second, in paying the seam the ladle should be held at least an inch above the deck. If the ladle is drawn on or close to the seam a quantity of air is drawn into the seam and has no time to escape before the glue becomes set,—this will cause bubbles, which in hot weather will also force the glue up over the edge of the seam leaving it hollow and unsound. The seams must be absolutely dry and clean before the glue is run into them.

"If applied to old work the old material should be dug out perfectly clean. Whatever adheres to the sides of the seam should be removed with a knife."—Ed.]

Suggestion for a Novel Race.

To the Editor of Motor Boating, Sir:

There are thousands of people who would welcome a fair motor boat race and I suggest these conditions: The boat to be 32 ft. in length, it must weight at least 2,900 lbs., the cylinder volume must not exceed 570 cubic inches. The boats with the crew and everything in ready to start shall be weighed, if there be any difference in weight, ballast must be added until they are of equal weight. The engines to be of the same cycle, or the same number of cylinders and of the same bore and stroke. Each engine is to have a dynamometer of the same kind placed between the engine and propeller. The race to be run on open waters. The distance to be at least ten miles, as every engine maker claims that his

engine is the best on the market, any one of them would be glad to prove it to the buying public. Such a trial would prove which boat took the most power to propel, and also prove which engine proved the most powerful. Each dynamometer should have a recording cylinder to register the work done for every mile of the course. In such a race I believe the interest and excitement would be up to fever heat.

JAMES C. WATSON, Penn Yan, N. Y.

To Determine Size of Carbureter.

To the Editor of Motor Boating, Sir:

Will you please tell me what size carbureter to use on an engine 4⅝ in. bore by 5 in. stroke running normally at from 700 to 900 r. p. m. (2 cycle, 3 port.) Is a 1¼ in. carbureter large enough or would you recommend a 1½ in. size.

WILLIAM OLSEN, La Crosse, Wis.

[To determine the proper size of carbureter for any given engine take .6 of the piston displacement for one minute and divide it by 4,500, the velocity in ft. per minute of the gas through the pipe. In your case the area of the piston equals:

$$\pi \times \left(\frac{4\frac{5}{8}}{2}\right)^2 = 16.8 \text{ sq. in.}$$

Therefore the volume in cu. inches equals:
$16.8 \times 5 = 84$.
And the displacement per minute equals:
$900 \times 84 = 75{,}600$ cu. in.
And:

$$\frac{.6 \times 75{,}600}{12 \times 4{,}500} = .84 = \text{area of inlet.}$$

The diameter would therefore be 1 1-16".
A 1¼" carbureter would be the best suited to your conditions.—ED.]

Regarding Propeller Dimensions.

To the Editor of Motor Boating, Sir:

I am about to install a new propeller in my motor boat but am in a quandry as to the size of wheel to be used, having been advised in radically different ways by as many people as I have consulted. I therefore appeal to you for assistance in the matter.

My boat is 26 feet over all, 7¼ foot beam, straight keel fore and aft, with a slight V in bilge. The engine is a Palmer two-cycle, two-cylinder, 8 h. p. make and break, rated to run at 450 revolutions. I expect the boat to make from 8 to 9 miles an hour.

F. N. MORTON, Philadelphia, Pa.

[We would advise you to use a three-bladed propeller of 20 in. diameter and 25 in. pitch. With this wheel turning 540 r.p.m. and allowing for a reasonable percentage of slip your boat should do in the neighborhood of 8¾ miles per hour.—ED.]

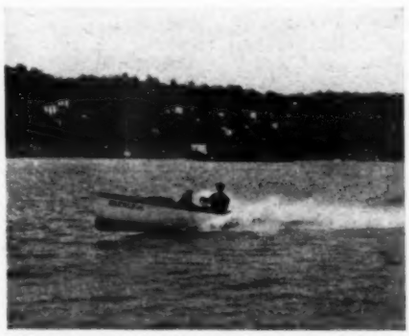
The Fastest Boat in the World.

To the Editor of Motor Boating, Sir:

Will you kindly settle a discussion by telling us the name of the fastest motor boat in the world, what her speed record is, where it was made and who owns the boat.

CARROLL C. GODWIN, Skowhegan, Me.

[It has been reported that Maple Leaf III, the Thornycroft hydroplane owned by Mackay Edgar of England, and which was built as a challenger for the British International Trophy races to be held next August, has done, in her trials, over 49 knots, which is equivalent to better than 57 miles per hour. Until this performance Pioneer, the 40-foot Fauber hydroplane owned by the Duke of Westminster was generally conceded the fastest boat in the world, although there is no official record on which to base this claim. Ursula, the Duke of Minster's unlimited racer, did 43 6-10 miles per hour at Monaco last year, and while several claim to have beaten this figure in short spurts, we believe it the fastest official record for a reasonable distance.—ED.]



Idlewild, Jr., well known on the Detroit and Ohio Rivers, is the winner of the Maysville, Traub, and Normandie Cups. She is a 24-footer of 4 ft. 1 in. beam, equipped with a 6-cylinder Pierce-Budd, and owned by P. H. Hesser, of Cincinnati.

A Good Waterproofing Formula.

To the Editor of Motor Boating, Sir:

I noticed in an answer to a correspondent asking for formulas for waterproofing canvas, that you did not mention parafine. I have used parafine in waterproofing canvas and drilling for the past five years with excellent results. This is the method: Shave up one pound of parafine wax and put in bottle holding about ½ gallon. Fill nearly full with ordinary gasoline and place in a bucket of hot water until wax is dissolved. Then pour in a pail and add 1 gallon gasoline, stir, and dip material to be waterproofed in this mixture. Wring tightly and hang in the open air until gasoline is evaporated. The 1½ gallons of mixture will waterproof about 80 sq. ft. of material at a cost of about 40c. If hot water is not available a good hot sunbath will hasten the solution of parafine.

Owing to the danger of spontaneous combustion with oilskins I have waterproofed painter's white overalls which answer the same purpose. Have been out in thunderstorms without getting even my shoulders wet with a suit treated in this manner. It is well to have a small bilge pump along, however, to pump out the pockets, which are not adapted for wet weather. Any good drilling can be made perfectly waterproof by this method and it prevents the cloth from rotting.

You can see from the foregoing that I am a partisan on the parafine question, but a good thing deserves to be pushed along. I trust this may prove of interest to some of my fellow motor boatmen.

EDWARD E. HURMANCE, Hudson, N. Y.

P. S.—I suppose that it is almost needless to mention that gasoline and parafine will make a nice combustible mixture, and that the person using it would do well to swear off smoking until the operation is over.

A Suggestion.

To the Editor of Motor Boating, Sir:

In the May issue of MOTOR BOATING I noticed that one person advocated using bronze screws in fastening the engine frame to the wooden support on account of iron screws rusting and losing their hold. The following plan is cheaper and better. Put a good heavy brass or bronze nut on the iron screw and recess the nut back into the foundation sill until it comes in line with the screw. Fill the threads full of tallow and turn the bolt into the nut. It will not rust and can be tightened up if it gets loose and never loses its hold on the wood.

JAMES C. WATSON, Penn Yan, N. Y.

A Boat for Shallow Water.

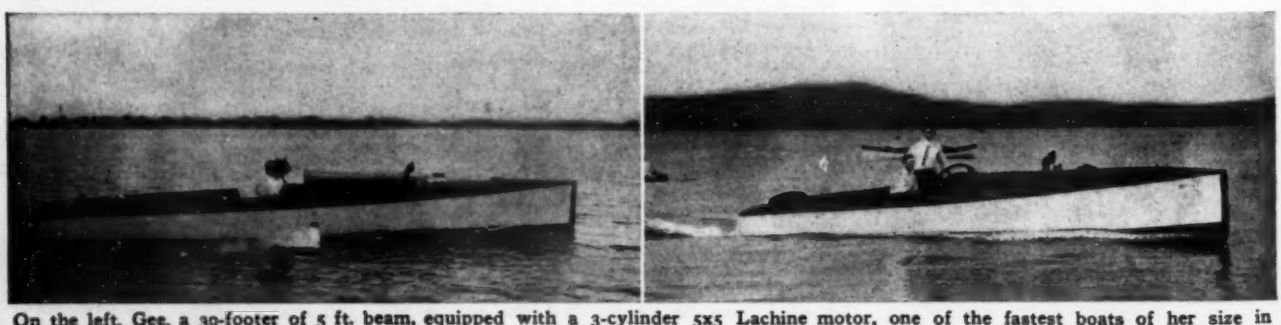
To the Editor of Motor Boating, Sir:

I live on Current River, a stream 80 to 100 yards wide with a depth of 30 ft. in the "deep holes," to about 18 inches in the shallowest places on the shoals. The current is from 3 to 4 or 5 miles per hour, in the swiftest places, for short distances, and the stream is considered a treacherous and dangerous one. Motor boats have not yet been used at this place.

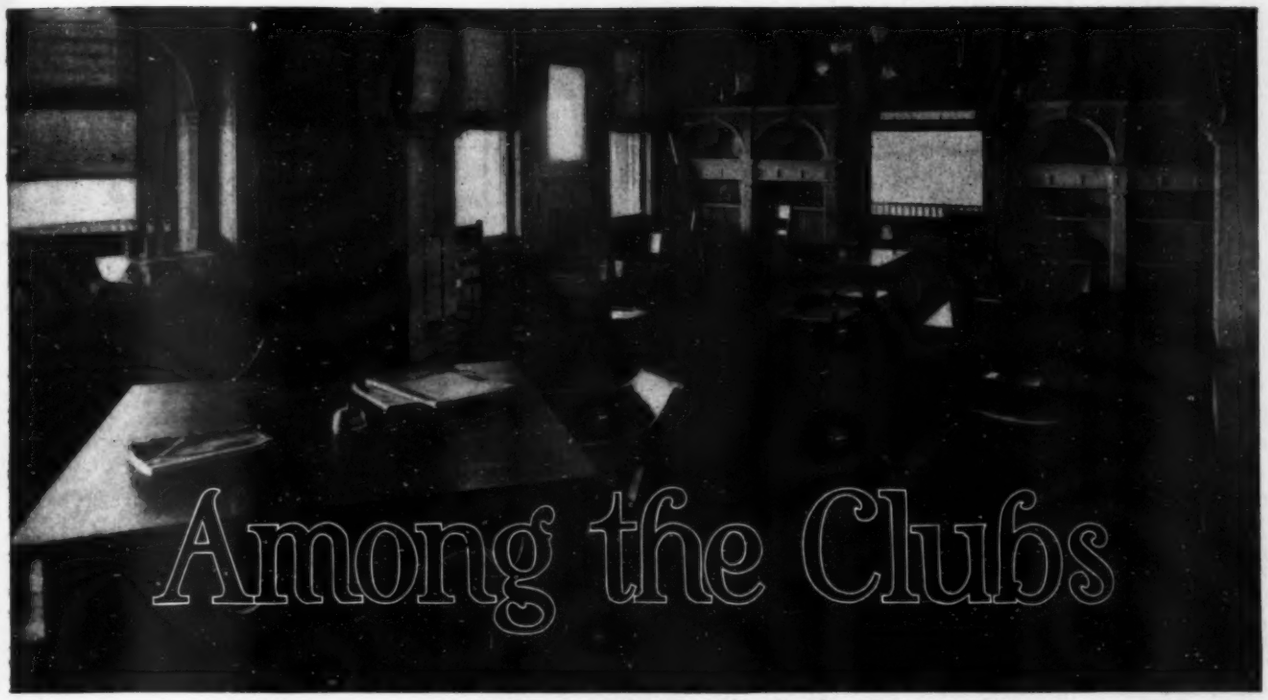
Now please tell me if a 16-foot launch can be driven up a stream like this, at an average speed of 5 or 6 miles per hour, with a screw propeller, and if so, would a 3 h. p. engine do the work, one-quarter the distance say, being swift shoals, the rest of moderate current? Would a boat of this size with screw propeller require water of greater depth than 18 inches? Which, on general would be best for such a stream the wooden or steel boat? Are steel hull boats as easily and speedily propelled, and are they as steady in the water as the wooden?

J. A. CHILTON, M. D., Van Buren, Mo.

(A motor boat if properly constructed would be thoroughly practical in your case. It should by all means be of the tunnel stern type, *i. e.*, with the propeller set in a tunnel built in the after part of the hull. By this arrangement draft may be made somewhat less than the diameter of the propeller wheel and if the tunnel is made as deep as the diameter of the propeller, which has been found thoroughly practical, the wheel will be protected and the draft may be kept down to a very few inches. Such a boat with a motor of the size you suggest should do in the neighborhood of 7 miles per hour. The choice between a steel or a wooden boat is largely a matter of preference, neither having an advantage in the matter of easy propulsion.



On the left, Gee, a 30-footer of 5 ft. beam, equipped with a 3-cylinder 5x5 Lachine motor, one of the fastest boats of her size in Canada. She is owned by Stephen Kent, of Montreal, and was built by the Gilbert Motor Boat Company, of Brockville, Ont. On the right, Doris, a 27-footer of 5 ft. beam, equipped with a 2-cylinder 4½ x 5 in. Schofield-Holden motor. She is owned by Mr. W. R. Mathews and won in the 2-cylinder class at Lachine last August.



Reading room in the club house of the National (formerly Brooklyn) Yacht Club.

The Cleveland Yacht Club, Cleveland, Ohio, is planning to move its club house to Kirtland St., so that the members may keep their boats in the new yacht harbor which, it is proposed, shall be constructed at the Kirtland Avenue waterworks pumping station. The plan provides for the construction of a sea wall to form a basin large enough to accommodate 100 yachts. The city is to expend $26,000 in constructing the sea wall, and the yachtsmen are to contribbute $25,000 for dreging the basin. One of the chief reasons for the construction of the new harbor is that it will relieve the congestion in the motor boat harbor at Gordon Park, where over 300 motor boats are now kept. The fear has been expressed that a disaster may come some time when, running from a storm, a bunch of the boats will try to crowd through the narrow entrance all at once. The construction of the new Kirtland Avenue harbor will tend to relieve this danger.

The Columbia Yacht Club, of New York, will inaugurate its 1911 season with a series of open motor boat races off its club house at Eighty-Sixth Street and Hudson River, on Saturday, June 10, at 2 o'clock, for boats of all types, sizes and speed. Members of all recognized yacht and motor boat clubs are invited to enter. No entrance fee will be charged. Solid silver cups will be awarded as first and second prizes in all events. The classes will include races for open motor boats of a speed of less than 14 miles an hour; for semi-high speed boats, making more than 14 and less than 22 miles an hour; for speed boats making more than 22 miles an hour, and for cruisers and hunting cabin boats, all ratings. The open boats, cruisers and hunting cabin boats will race twice over the 5-mile triangular course in front of the club house, the semi-high speed boats will cover the same course three times, and the high speed boats will go to Ardsley and return, about 30 miles. All races are handicaps, under the A. P. B. A. rules. The race committee has sent invitations to clubs along the Hudson River, on Long Island Sound and adjacent waters, and it is expected that there will be more entries in these races than in any of the successful regattas held since the club's organization in 1867. Many well known boats have already been entered in the high speed division. This Spring Regatta is also the opening day of the club, which is always an enjoyable social occasion. Entry blanks and full particulars of the races may be secured by addressing S. Alling Halsey, chairman Race Committee, 56 Cedar Street, New York.

The Norristown Motor Boat Club, Norristown, Pa., recently elected the following officers for the year: Commodore, Dr. Frank C. Parker; Ralph E. Thomas, vice-commodore; William Schwartz, treasurer; William Jackson, secretary. Board of directors: John Leitenberger and M. L. Ganser, for three years; D. Clyde Yeakle and Thomas Jamison, Sr., for two years; George W. Rambo and H. K. Bussa, for one year. A vote of appreciation was extended to Thomas Jamison, Sr., who, as commodore, successfully guided the club through its first year. It was decided to join the newly organized Delaware River section of the American Power Boat Association, and to send two delegates to the convention of the section. On May 1 the club took possession of its new home, which is being still further improved.

The Des Moines Power Boat Club, Des Moines, Ia., is a new organization formed by twenty-five motor boat owners of that city. The officers elected were: Commodore, William Halloran; vice-commodore, John Kiley; secretary-treasurer, J. G. Cassell. Plans are being made for a regatta on June 10, and the endeavor will be made to interest every motor boat owner on the Des Moines River.

Inter-Lake Yachting Association. The Power Boat Regatta Committee of the I. L. Y. A. is expecting a fine list of entries for the races on July 18th and 20th, during the association's regatta at Put-in-Bay, Lake Erie. The speed boat events will be held on Thursday, the 20th, for three classes, each to go twenty miles, scratch. There are to be no handicap races for speed boats. The classes and prizes are as follows: Speed boats 32-40 feet, first prize, $150 cash, $75 I. L. Y. A trophy cup and championship flag; second prize, $75 cash. Speed boats 26-32 feet, first prize, $150 cash, $60 I. L. Y. A. trophy cup and championship flag; second prize, $75 cash. Speed boats 26 feet and under, first prize, $110 cash, $50 I. L. Y. A. trophy cup and championship flag; second prize, 55 cash. Boats in a smaller class may enter a higher class. There are no entry fees, no restrictions except overall length, and the first boat home in each class is the winner. Among the entries expected for the largest class are: Carl G. Fischer's new 40-foot Seabury racer, guaranteed for 35 miles an hour; Cero II, Robert Deming's steamer; Van Blerck, of Detroit; Whitlock's Hoosier Boy; W. F. Meier's Craftsman, and possibly the new Fauber hydroplane owned by James A. Pugh of Chicago. The races for cruisers and open boats will consist of ten-mile scratch events on Tuesday, July 18, and handicap races on Thursday, for which a liberal prize list is offered. The cruisers will be divided into two classes, 42 feet and over, and under 42 feet. The open boats will be raced in one class on a speed rating of from 8 to 15 miles. For the scratch races the cruisers will receive championship flags and cups and $180 in cash. For the handicap events in these classes $190 has been allotted for cash prizes. Great interest will center in the large cruiser class, in which A. Y. Gowen's new high speed cruiser will endeavor to wrest the I. L. Y. A. championship from Florence II, owned by A. H. Marks, of Akron, Ohio. The rules and conditions for these races will be issued to the members of all the clubs in the association three weeks before the regatta opens. A. Y. Gowen, Rockefeller Building, Cleveland, is chairman of the power boat regatta committee, and Otto Nehrenst, 813 Superior Ave. N. E., Cleveland, is chairman of the rules committee.

The Manhasset Bay Yacht Club, Port Washington, L. I., N. Y., has announced that it will hold races for motor boats on Saturday, August 19, for the following classes: Class A, not over 35 feet over-all, unlimited power; Class B, not over 25 feet over-all, and not over 35 h. p.; Class C, not over 18 feet over-all, and not over 14 h. p. There are no other restrictions. Handsome prizes have been presented by members, to be awarded the winner in each class. If a sufficient number start a second prize will be awarded. For further particulars, inquiry should be made of James W. Alker, Chairman Race Committee, Manhasset Bay Yacht Club, Port Washington, L. I.

The Meriden Motor Boat Club, Meriden, Conn., has purchased a new boat house, 40 by 16 feet, near the present house. A reception was held on May 27 to mark the opening of the season.

The Frontenac Yacht Club, Frontenac, N. Y., in the Thousand Islands, is making great preparations for the match for the Gold Challenge Cup of the American Power Boat Association to be held on August 8th, 9th and 10th. It is planned to make the week during which this event occurs a gala one. There will be races for other classes of motor boats, a water carnival, and other interesting events. The Gold Cup match will consist of three races, and the distance for each race will be twenty-eight miles, four times around the seven-mile triangular club course. On this course the boats are always in plain sight from start to finish. The racing boats shipped by rail go to Clayton, N. Y., two miles from Frontenac, where they are lifted by cranes direct into the water of the St. Lawrence. Dixie IV, it is expected, will defend the trophy for the Frontenac Yacht Club, and challenges have already been received from the Thousand Island Yacht Club and the Motor Boat Club of America.

Western Power Boat Association Regatta. There will be a great deal of interest in the Western Power Boat Regatta held by the Illinois Valley Yacht Club at Peoria, Ill., July 25th and 26th. The 40-foot class will include representatives of the fastest

type of racing motor boat from the East, the lakes, and the Mississippi Valley, and several contenders for the honor of defending the International Trophy will be among the entrants at Peoria. Racing Manager Thomas H. Webb has announced that Corning & Company and the Corning Distilling Company have donated to the I. V. Y. Club $1,000 as a cash prize for the 40-foot class. President Franklin T. Corning and Manager Peter Casey have been generous patrons of motor boat racing at Peoria, and provided the principal prizes for the last two years.

The Bogota Boat Club, Bogota, N. J., recently held its annual meeting and elected the following officers: President, F. W. Cane; vice-president, W. C. Ferguson; secretary, Ralph Stalker; treasurer, Ira Harris, Jr.; captain, George C. Felter, Jr.; lieutenant, Willard P. Burdett; trustees, G. Byron Ferguson, William Pennell, Tunis B. Haring, Herman Wirtenson, R. S. Felter. The financial reports showed a prosperous condition. Several new motor boats are being got ready for members, and the outlook is for an active season.

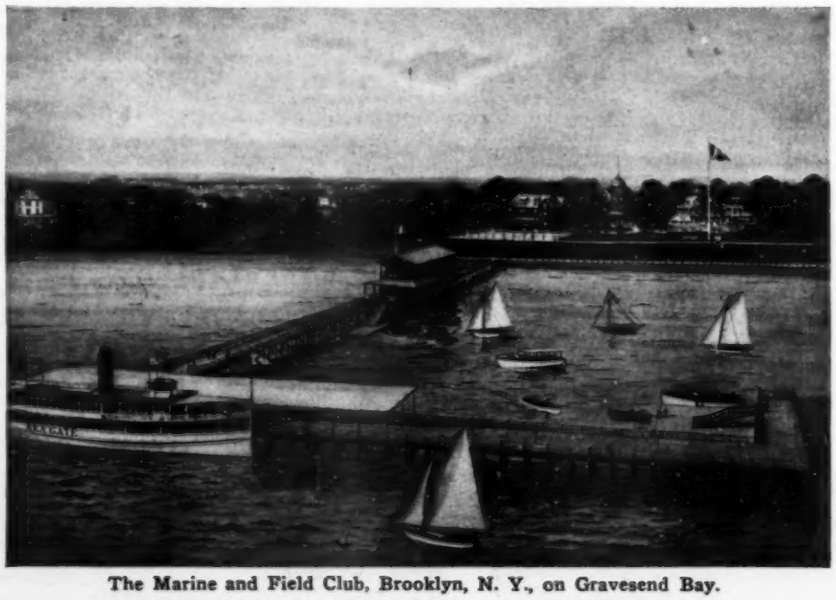
The Cumberland Boat Club, Nashville, Tenn., has just completed its new club house on the Cumberland River. The new house is 125 by 40 feet, and is reported to be one of the most handsome and thoroughly equipped boat club houses in the South. It has a large ball room, reception hall, library, lavatories, shower-baths, and locker rooms. It has a large workshop for building and repairing boats, equipped with a steel elevator for drawing up boats from the water and into the shop. A complete outfit for charging storage batteries is installed. The members have shown great interest in plans for the coming season, and nearly thirty new motor boats will be added to the roll.

The Edgewater Motor Boat Club, of Edgewater, N. J., is having alterations made in its club house, and a much larger landing stage constructed. The new club pennant, a white diamond with two triangles, red and blue, was flown for the first time at the opening Memorial Day regatta. Many applications for membership have been received and the club prospects are bright.

The Hudson River Motor Boat Club, West 151st St. and Hudson River, New York City, is planning for a social occasion on the Fourth of July, which is expected to be not only a "safe and sane" method of celebrating the "Fourth," but a most enjoyable one. The boats of the squadron will be decorated and ready at 6 o'clock to take the members and their guests aboard; they will cross the river to Edgewater, where a dance will be held. Then when the moon rises the recall will be sounded and the fleet will proceed up the Hudson, passing the public illuminations, and then home.

The Duluth Boat Club, Duluth, Minn., is making big preparations for the famous Midsummer Water Carnival, which is to be held this year on July 20, 21 and 22. The beautiful setting of Duluth, on the hills at the western end of Lake Superior, with an immense land-locked harbor, ten miles long, and the broad St. Louis River, winding down into this harbor, makes it an ideal place for water sportsmen and motor boaters. The Duluth Boat Club has over 1,500 members, a large main club house and three branch stations on the harbor, river and inland lake, so that it is an organization especially capable of carrying through large regattas successfully. The motor boat races for the 26, 32 and 40-foot classes will be run off July 20 in Duluth Harbor, over a fine course entirely in deep water and with easy turns of 800-foot radius. There is naturally great interest locally in the coming races. Last year Duluth motor boat enthusiasts procured eight one-design boats in the 26-foot class, equipped with powerful engines. This year Mr. C. E. Brown, of Duluth, is bringing out a new and very powerful 26-footer, Spit-fire. Commodore W. E. Scripps, of the Great Lakes Power Boat Association, sends word to Duluth that he will enter a new 26-foot boat with a high power Scripps engine. The Duluth Boat Club is well represented in the 32-foot class. Among the well known boats are the new 32-footer just put out by Mr. Julius Barnes, President of the Duluth Boat Club. Mr. Barnes' boat has a 60 h. p. Erd engine. Mr. Dunplaise, a local motor boat owner, is reported to have a 32-foot motor boat in course of construction in which he will put a 100 h. p. engine for entry in the coming Midsummer Race Meet. Fred Holmberg, well known in Northwestern motor boat circles, will have his 32-footer Clipper in the coming races. Mr. J. H. Cole, of Oconomowoc, is having a 40-foot motor boat built by the Johnson Company at White Bear Lake. A 125 h. p. Capitol engine will be installed in this boat, which will be brought to Duluth to enter the 40-foot contest with Richard Schell's well known D'Autremont, a 40-footer with 100 h. p. Capitol engine. D'Autremont is the holder of championships in the 40-foot class of Duluth, Lake Minnetonka and White Bear Lake. Other Duluth motor boats in the 40-foot class are Buster, 60 h. p. Sterling engine, owner A. M. Todd, and Dingle-Doman, 60 h. p. Capitol engine, owner Max Cook. Three beautiful cups, permanent trophies, will be offered to the winners of the Duluth motor boat races. Mr. Robert W. Marshall, 204 Wolvin Building, Duluth, motor boat captain of the Duluth Motor Boat Club, is in charge of all motor boat events. Any communications regarding the coming races in July should be addressed to him.

The Brooklyn Yacht Club will in future be known as the **National Yacht Club.** It has been known as the Brooklyn Yacht Club since 1857, when it was organized, and as the Brooklyn Yacht Club it is the oldest incorporated yacht club in the country, dating its incorporation from 1864. It has had a varied career at times, being quite prominent in yachting affairs and then being disrupted by internal troubles. The Atlantic Yacht Club was formed by members of the Brooklyn Yacht Club in 1866, the Bensonhurst Yacht Club similarly in 1903 and the Gravesend Bay Yacht Club in 1905. A meeting of the Brooklyn Yacht Club members was held on May 1 at the clubhouse. Vice-commodore Soper presided, and those present voted unanimously to make the change. The legal steps to formally adopt the name of National Yacht Club will be promptly taken, Vice-commodore Soper having appointed a committee of three from the membership to look after those details. The change of name of the Brooklyn Yacht Club is the result of the determination of the members to enlarge the scope of the club both in a yachting and social sense. The club's racing fixtures, such as the Bermuda and Cape May events and the big reciprocity race from New York to Halifax, have already given this organization a national and even international reputation.



The Marine and Field Club, Brooklyn, N. Y., on Gravesend Bay.

The Marine and Field Club, Gravesend Bay, Brooklyn, N. Y., is just completing extensive improvements of the club property at Bay 13th St. and Cropsey Ave. Our illustration shows the new extension of the pier, with a second large landing float inside the L. The new pier will greatly improve the anchorage and offer facilities for a large fleet of motor boats and sailing yachts. Gravesend Bay is a popular boating ground because of its nearness to New York and freedom from heavy traffic. A model room has been opened in the clubhouse where members are urged to exhibit models of their boats. The Yachting Committee is constituted as follows: Commodore, Charles Martin Camp; Louis H. Smith, vice-commodore; R. B. Marchant, rear-commodore; Paul G. Chace, fleet captain; H. E. Buermeyer, measurer, Everett Peet, yachting secretary.

The Portland Power Boat Association, Portland, Me., opened its new clubhouse with a banquet attended by representatives of many of the leading New England yacht clubs. Club members are planning for the annual cruise in June, short trips to points in Casco Bay during the summer, and several races on dates to be announced later.

A Correction.—The caption under the photograph of "Mascot II at full speed," appearing on page 45 of our May issue, erroneously credited her ownership to Ralph E. Thomas. Fire Chief P. V. Hoy, of the Norristown, Pa., Motor Boat Club, is the owner of the craft, and is shown at her wheel.

The Farragut Sportsmen's Association, of Camden, N. J., has arranged an extensive programme of summer activities which will be of interest to motor boat owners. There will be motorboat, sail-boat, canoe and swimming races open to all, on May 30, July 4, August 12 and September 23. Motor boat races for members only will be held on June 17, July 15, August 26 and October 7. Association runs in which every member is expected to participate will be held on June 11 and 25, July 23, August 6 and 13, September 3 and October 1. Many handsome prizes will be awarded during the season, among them some valuable cups offered by President Charles Elmer Smith. The Association has joined the Delaware River Yacht Racing Association, the newly organized section of the American Power Boat Association.

The Maryland Motor Boat Club, of Baltimore, will hold the first long-distance power boat race of the Chesapeake Bay on July 15 when the racing craft will start from Old Point Comfort and finish off the club wharf, a distance of 187 miles. All cruising craft belonging to yacht clubs, and deemed capable of making the trip by the regatta committee, can enter in one of the two classes, above 40 feet water line and between 30 and 40 feet. So far an even dozen craft flying the colors of the M. B. C. have been entered, while entries are expected not only from other Baltimore clubs but from Philadelphia.

The Chesapeake Bay Yacht Racing Association will hold its annual regatta during the 10 days beginning July 16, on which date the fleets of the several clubs that form the organization will rendezvous at Oxford. While the association was formed primarily to develop sailing races, this year the program will include races for motor boats, both speed and cruising, and there will be two long-distance events for cruisers included. One of these races will be from Cambridge to Norfolk, as the fleet makes its way to that city and the other will be from Norfolk to Baltimore.

New Things for Motor Boatmen.

New Attachments and Accessories That Are Offered to the Man With a Boat. The Month's Production of Devices Designed as Aids to Motor Boating.

[Under this heading will appear each month descriptions and, whenever possible, illustrations of the various devices designed to add to the pleasure and comfort of motor boating which have been brought out since the previous issue. It should be kept in mind that the department in any one issue is, as it were, only one month's installment of the many useful things on the market, and that it will be well to consult the previous issues of MOTOR BOATING which will form, together, a very complete illustrated directory of the things the motor boatman needs. —In writing the makers of the articles shown, if our readers will mention MOTOR BOATING they will receive special attention.]

Two New Klaxons.

The Klaxonet, or miniature Klaxon, made by the Lovell-McConnell Mfg. Co., of Newark, N. J. is now being furnished with a long projector, similar to the Klaxon itself, and the catalog name has been changed to Type L Klaxonet, to correspond to the type L Klaxon. This new type will hereafter be regarded as the standard Klaxonet, and the price remains the same. A combination Klaxonet has also been added to the line, so that there is now a corresponding type of Klaxonet for every Klaxon type. This new instrument combines the projector Klaxonet with a reed horn, the latter being placed at a particular advantage through its combination with the Klaxonet diaphragm and projector which strengthen its power. Both a loud and a soft warning signal may be sounded with this instrument, the device being attached so that the bulb and electric button are close at hand.

* * *

Polarine.

Oil, grease and transmission lubricants are being supplied under the brand "Polarine" by the Standard Oil Company, and each product is manufactured for the lubrication of the special parts of the motor for which it is intended. The oil is designed to afford perfect lubrication in tropical or in zero weather and is delivered either in sealed cans of one or five-gallon size or in barrels and half-barrels. The other Polarine lubricants are put up in cans of convenient size.

* * *

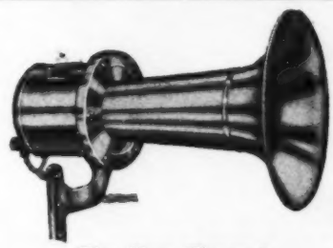
Trumbull Battery Switch.

The Trumbull Electric Mfg. Co., of Plainfield, Conn., are making a new type of battery switch, known as the "Junior," especially for use with gas engines. All the parts are made of copper and there are no iron screws. It is a very compact device, as the illustration shows, and is made with heavy insulation upon the handle and a rapid throw from one contact to the other on the double-throw switch. The switch is so constructed that the blade could not fall out of the hinge even if the screws were removed. It is a very simple matter to fasten the wire and all the holes are drawn, giving a large amount of screw thread. It can be fastened on a metal support without danger of short-circuit. The price of the style shown is 40c. Other types are made which sell for 20c and 30c.

* * *

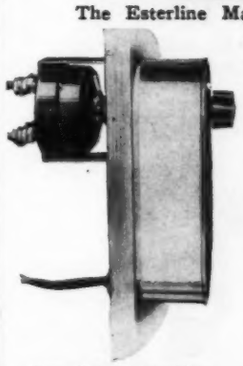
New Pederson Lubricator.

The accompanying illustration shows a new type of multiple feed rotary pump lubricator which has been brought out by the Pederson Lubricator Co., 644 First Ave., New York City, and which possesses a number of novel features. It has only two moving parts and may be made with any number of feeds, since each is individually adjustable. It may be placed either directly in the oil supply tank or at a considerable distance from it, as the pump has a strong suction and discharge power and it may also be placed in either a horizontal or a vertical position, since the pump will operate equally well in either direction of rotation. The instrument comprises a casing and a cover with a rotating shaft inside of the casing. A head and stem fits the bore of this and the head is recessed in its outer face and transversely slotted, with a sliding piston. By rotating the shaft which carries this piston, it is given a transverse movement through acting upon a stationary pin. This action continues when the shaft is opposite the inlet port, which draws in the oil, the oil being confined between the casing and the piston until opposite the outlet. At this time the piston is again acted upon by tapered screws, equally spaced between the fixed studs in the cover and the oil is discharged.



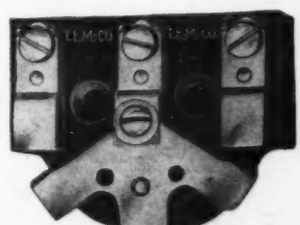
The New Klaxonet.

The Esterline Magneto.



Esterline controller.

Hartford plug.



The Trumbull battery switch.

Patterns of Collegiate Robes. Pederson lubricator.

Matchless Lighting and Ignition System.

The Esterline Company, of La Fayette, Ind., have devised an electric lighting and ignition system for motor boats, which possesses a number of unique features. The complete equipment consists of a positively-driven magneto of the direct current type, a storage battery and an automatic controller. The generator may be connected directly to the pump shaft in the same manner as an ignition magneto, without the use of a speed governor, and is supplied with complete ignition equipment, which can be omitted if desired. The fact that the generator is driven at all times in direct proportion to the engine speed, enables the ignition and lighting systems to be combined and the use of a permanent magnetic generator is made possible by the employment of an electric controller which has four distinct functions. It limits the current through the battery to the normal charging rate when the generator is running at high speed and it disconnects the battery from the generator whenever the voltage of the generator is less than that of the battery. It also connects the battery to the generator when the voltage of the generator has reached a point where it will charge the battery and it prevents the connection of the battery to the generator when unnecessary. The controller occupies space upon the bulkhead and is water and dust-proof. All wiring is upon the motor side and is not exposed to view. The generators are made in two sizes with a continuous capacity of 7½ and 12½ amperes at six volts.

* * *

Hartford Arc Light Plug.

A plug built upon the same principle as the electric arc light, is being manufactured by the McIntyre Machine Works, of Hartford, Conn., and is practically indestructible. The points of this plug, as can be seen from the illustration, are directly in line and are strongly supported and fully protected by the heavy guard surrounding them. The spark will occur at the points whether the source of ignition be a powerful magneto or the weakest battery that will fire a charge in the cylinder. The plug is so constructed that it can be easily taken apart, the upper end and the base being made up metal to metal at an angle of 45 degrees, so that they are gas tight. No gaskets or packing of any kind are used, and the continuous pumping action of the gases at the arc light points keeps the points clean. The wire terminal holding member is so constructed that it will hold the several different makes of terminals and the price of the complete plug is $1.50.

* * *

Collegiate Robes.

The Capital City Woolen Mills, of Des Moines, Iowa, whose distributors are the Powell Supply Co., of Omaha, Nebraska, are manufacturing an article known as the Collegiate Robe especially for boat owners. These robes are designed to express the individuality of the owner and any sort of a monogram or club emblem may be worked into the robe. The style known as 5X, measures 62 by 72 inches and is the proper weight for spring and summer, with a smooth, hard-finished mercerized back. It is bound in any color of felt desired. The 3X robe is all wool, closely woven, of medium weight, and is made in all colors to match upholstery. The 6X robe is plain faced and is reversible, the same as the 5X. It has a mercerized back, the only difference between this and the 5X being that the latter has a gray check face.

J. & B. Magneto.

The Jacobson-Brandow Company, of Pittsfield, Mass., have brought out a strictly high tension magneto, which is illustrated herewith. A feature of this instrument is the fact that it is not necessary to use extreme care in adjusting the spark plug points, as it makes very little difference whether the points are 1/8 or 1/64-inch apart. The platinum points of the magneto itself also will operate with equal efficiency when they are anywhere between 1/64 and 1/16-inch apart. Both high and low tension windings are on the armature, rotating the high as well as the low tension winding within the influence of the magnetic fields. The action of the circuit breaker is very quick, as one platinum point is carried on a short steel spring, giving a very quick break, actuated by the spring as well as by the slower mechanical break. A much longer spark is therefore thrown on slow speed than would usually be the case. The prices of these magnetos range from $40 to $110, according to the capacity and design.

* * *

Rex Automatic Anchor.

Walter Coleman & Sons, of Providence, R. I., in order to introduce the "Rex" anchor, are selling the larger sizes (25 pounds and over, which ordinarily retail at 20 cents per pound) at 8 cents per pound. The smaller sizes range in price from $1.25 for the 4-lb. to $4.50 for the 20-lb. As may be noticed from the illustration, this anchor is so designed that the weight is at the proper point to insure its rapid digging in and burying itself when the strain is applied through the warp or cable. The anchor is of forged construction with no cast parts and there are no keys or pins to wear out or break off. When not in use the anchor may lie flat upon the deck and is always ready for use. It can be thrown overboard closed and will open of its own accord before it reaches the bottom. It has a long, light shank with a stock of proper proportions and a larger and heavier crown and flukes than the ordinary type.

* * *

Hess-Bright Grease.

The Hess-Bright Manufacturing Company, of Fairmount Ave., Philadelphia, have just placed upon the market a specially pure grease for use in connection with anti-friction bearings which is known as Hess-Bright Ball Bearing Grease. It is made from Pennsylvania stock, carefully compounded, and is permanently neutral or free from uncombined alkali and from acid. It will not thicken, gum or turn rancid and is exceptionally smooth. This grease can be used to advantage wherever mineral oil grease can be used, but it is especially advantageous in anti-friction bearings. It is made in two densities, No. 1, or heavy, and No. 2, or medium; the latter being used for all anti-friction bearings run at medium speeds. The grease is put up in cans of five, ten, twenty-five and fifty pounds, and in barrels and half-barrels.

* * *

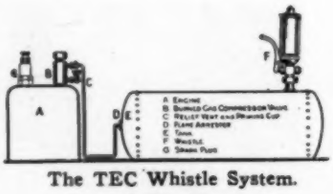
TEC Whistle.

A new and comparatively inexpensive whistle outfit has been placed upon the market by the Transportation Equipment Company, Hudson Terminal Building, New York City, which includes a burnt gas accumulator with six feet of quarter-inch copper tubing from the motor to the tank, a 7 x 20-inch tank and a 1½-inch single tone whistle, at a price of $10. As may be seen from the diagram, this whistle operates from the exhaust gas of the engine, stored in a tank until used. The outfit is connected to the motor by removing a priming cup from one of the cylinders and screwing the compressor valve in its place. A priming cup is combined with this valve, so there is no interference with the starting of the motor. In this valve is a tool-steel piston with a movement of 1/64 of an inch, and at each stroke of the engine a small particle of burned gas passes through this opening, through the pipe and flame arrester into the tank, where it is stored until used. The pressure is governed entirely by the motor and when the pressure in the tank is equal to that in the motor the passage of the gas to the tank automatically stops. The whistle may be connected to the tank by tubing if desired and a pull upon the lever operates it. A four-tone chime whistle may be used instead of the single tone.

The J. & B. Magneto.

The Rex Automatic Anchor.

An American Lubricator.



The TEC Whistle System.

A Heintz Art Metal Trophy.

Burn-Boston Battery.

The prejudice against liquid batteries is easily overcome if the liquid cannot spill, since liquid batteries, if properly constructed, possess an extraordinary number of ampere hours' capacity upon open circuit work. The Burn-Boston Battery Company, of 8 Doane St., Boston, are now making a new type of liquid battery, contained in a square, waterproof vessel, made to fit the same space as a dry battery. The voltage of this battery is 1.5 and the internal resistance is about the same as the ordinary dry cell, but the ampere hours' capacity per annum is said to be many times greater than any open circuit battery and it is claimed that the battery will deteriorate less than 5 per cent per annum when not in use. Although the cell contains a liquid which will not freeze, and has no corrosive action, it is sealed like a dry battery and can be held in any position without leaking. A flexible wire connection is provided from the zinc terminal, which is made solid below the seal, so that there is one less connection to make. This flexible terminal is of tinned insulated wire, and is connected to the next carbon terminal so that the batteries are in series in the customary manner. The economical operation of these cells is shown by the fact that a set of six was recently exhibited which had supplied all the ignition to a single-cylinder motor boat for two seasons with no attention.

* * *

American Lubricators.

The newest type of oilers manufactured by the American Lubricator Company, of Detroit, Mich., are made of pressed brass, heavy to withstand rough usage and can be used to take the place of the cast oiler in many cases. To regulate the feed it is only necessary to raise the lever at the top and screw the milled edge up or down until the desired flow of oil is secured. When the top lever is lowered the flow of oil is shut off. These cups are cylindrical in shape and are made in nine sizes and two different finishes, either brass or nickel plate. The brass cups range in price from $3 to $13 each according to size and the nickel plated cups from $3.50 to $14 each.

* * *

Waverly Gasolines.

The Waverly Oil Works Company, of Pittsburg, Pa., independent refiners, are marketing a grade of gasoline which is the product of distillation of Pennsylvania crude oil and is said to be a perfectly safe product. Much of the gasoline with which the market has been flooded is a product which is compressed from natural gas and ordinarily has a gravity test of from 84 to 105 degrees, but in order that it may be made saleable is mixed with a low gravity benzine so that a cheap variety of commercial gasoline may be obtained. This mixture is ordinarily dangerous on account of its explosive qualities, due to the fact that the liquid is in reality a gas under pressure, and in addition to this it is liable to contain impurities from the lower grade of benzine with which it is mixed. It is due to this difference in the process of manufacture that Waverly gasolines are said to be the cleanest and most powerful.

* * *

Heintz Art Trophies.

A departure from the standard ideas of loving-cup manufacture is shown in a new process used by the Heintz Art Metal Shop, 1354-1362 West Ave., Buffalo, N. Y., one of whose products is shown upon this page. These articles are made, of course in any style and are of copper with silver designs applied. The prices of the type shown include silver ornaments upon one side and a conventional design upon the other, the lining being finished in either gold or silver. If desired, an attractive design, suitable for any event, may be substituted upon one side without charge. The silver on these articles is bright but the copper is finished in three different styles known as Sultan, Royal and Verd. The first is a beautiful bronze color with a darker shading around the silver, this being particularly attractive with a gold lining. The second type presents a deep rich red showing iridescent colors, particularly adapted to a silver lining. The last finish is used with either a gold or a silver lining and is of a dark green color. All cups are thoroughly lacquered to prevent tarnishing. The price of the tobacco jar shown, which is 8½ inches in height, is $25.

Eureka Carbureter.

A two-cycle special carbureter is being manufactured by the Variable Power Gas Engine Co., of 52 Wall Street, New York City, an illustration of which is shown upon this page. This instrument consists of a gasoline reservoir with a float and valve which automatically maintains the level, and a mixing chamber in which rotates a piston throttle having windows cut for the gas and air. Inside the mixing chamber is a spraying nozzle which regulates the quantity of gasoline drawn in the motor by the suction, proportionate to the speed of the engine. There is no needle valve to set or air valve to regulate. A simple turning of the throttle varies the charge delivered to the motor in proportion to the speed of the engine and this gives a high degree of flexibility. This carbureter has been designed to meet the requirements of the two-cycle motor of both the two and three-port type, and its use will enable the two-cycle motor to run with the same degree of smoothness and flexibility as any of the four-cycle type. The price of this instrument varies from $12 for the one-inch standard size pipe thread to $40 for the 2½-inch size.

* * *

Aplco Improved Ignition.

The latest addition to the "Aplco" line, made by the Apple Electric Company, of Dayton, O., is an attachment for their lighting dynamo shown in the accompanying illustration which permits it to be driven at engine speed. The machine is designed to replace the magneto, securing a drive from the same shaft. Provision is also made through a bevel gear to operate any form of igniter. In addition to furnishing ample current for lighting the boat, the system will, in connection with the "Aplco" floating storage battery, supply a uniform 6-volt current for ignition. It is said that even better results can be obtained from it than from a magneto, especially at low engine speeds.

* * *

Duplex Multi-Spark Plug.

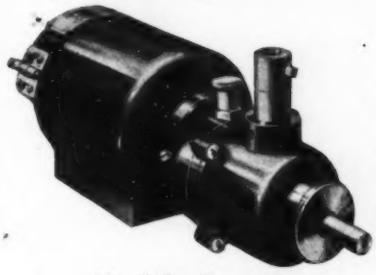
The Duplex Multi-Spark Plug Co., of Devil's Lake, N. D., have recently placed upon the market a new type of spark plug in which is embodied a double annular spark gap, one working as an auxiliary to the other. Ordinarily the sparks cross the upper gap shown in the illustration, but if for any reason they fail to cross this gap the lower flange provides an auxiliary one which insures the proper sparking and ignition of the gas to obtain the best results. The lower flange or electrode closes the end of the firing chamber in such a manner that it also acts as a baffle to keep the oil from entering. The firing chamber is practically enclosed so that the gas, accumulated under pressure during the compression stroke, is shot forcibly out into the cylinder upon ignition, carrying with it all soot and foreign matter which might otherwise accumulate upon the sparking points. The porcelain cannot break through heat or expansion, as it is shielded from the direct contact of the hot and cool gases of the explosion and the compression strokes. The plug lists at $1.25.

* * *

Ellison Motor Boat Whistle.

A very efficient, compact and economical signal that requires only 6 x 6 inches of floor space has just been brought out by the A. H. Nelson Mfg. Co., of Newton, Mass. As the illustration shows, the instrument is operated by bringing a friction wheel on the blower in contact with the engine flywheel by moving a small lever. As this lever has six operating positions the whistle can be sounded from any part of the boat by attaching a cord and running it to the part desired. The sound may be instantly produced and may be continued for any length of time and the whistle has a tone adjustment to secure the maximum sound upon each individual boat. The tone is deep, rich and pleasing, and of good carrying power. The lever for bringing the blower against the flywheel operates in either direction or up or down on each side of the blower and oil cups are provided for lubrication. The sleeve of the whistle may be raised or lowered to obtain the desired tone. The price is $15.

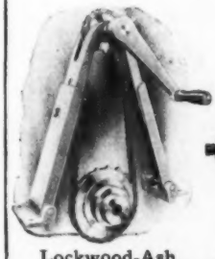
The Eureka Carbureter.



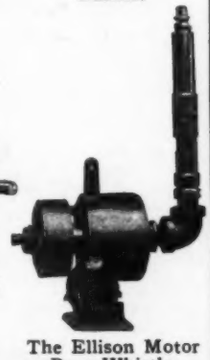
The Aplco Dynamo.

The Duplex Multi-Spark Plug.

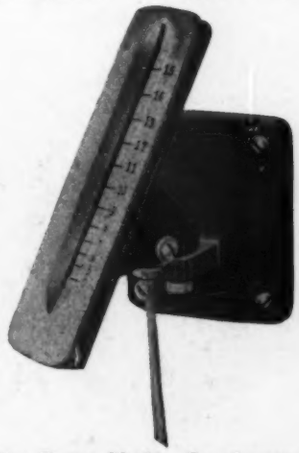
The Bray Roni Burner.



Lockwood-Ash Rear Starter.



The Ellison Motor Boat Whistle.



The Roper Marine Speedometer.

Bray "Roni" Burner.

An acetylene burner with but one gas opening instead of the two usually found upon burners of this type is being made by the W. M. Crane Co., 16, 18 and 20 West 32d Street, New York City. The shape of this burner, as will be noticed from the illustration, is elongated instead of being round, and whereas with all other burners the flat flame is produced by having the two jets of gas impinge against each other, with this type the flat flame is produced by a single opening. The gas way is, of course, as large again as each opening in the two-arm type and is correspondingly less likely to become clogged. One of the greatest advantages of this type is the fact that it is impossible for the flame to crack the reflector or lens, as is often the case when one side becomes clogged so that the flame shoots from one arm against a fragile portion of the lamp. The burner cannot get out of alignment and cannot choke or close up inasmuch as it will not carbonize under ordinary conditions. All of the flame is above the slot and as the gas rushes out from the gas orifice it carries with it air through the round openings at the side. An ordinary tooth-brush may be used to clean it and the burner is practically indestructible. The price is 35 cents each or $3 per dozen.

* * *

"L-A" Rear Starter.

The Lockwood-Ash Motor Co., Inc., of Jackson, Mich., have just brought out a rear starter that can be attached to any motor or reverse gear without changing any part of the boat foundations and it can be used either fore or aft of the motor. As the cut shows, the pawl carrier is a part of the engine coupling and as the engine starts, these pawls throw outward against the cast iron flange of the couplings and stay in this position when the motor speed is 100 r.p.m. or more. The starting sprocket is supported on a shaft of ample size to insure strength and rigidity and this is in turn mounted upon an adjustable standard that is telescopic and will allow for adjustment in every direction. A ⅜-inch solid block chain is used that will stand a pull of 1,200 pounds, which is from four to six times the amount of strain ordinarily exerted. The starting crank is easily removable but will not let go under pull and the clutch takes hold immediately upon the forward movement of the starting crank and releases instantly without jolt or jar as soon as the engine starts. By loosening the collar which holds the sprocket in place the direction of starting may be easily changed. Any bore or key seat from ⅞-inch up to 1¼-inch may be had and the coupling may be fitted to any bore between these limits.

* * *

Roper Marine Speedometer.

A motor boat speedometer, one that will indicate accurately the actual speed of the boat from its passage through the water rather than from the number of revolutions of the shaft, has been recently placed upon the market by C. F. Roper & Co., of Hopedale, Mass., manufacturers of the Roper safety propeller. The illustration shows the indicator of this instrument. A mercury gauge is supplied which is set up near the wheel and the column of mercury is acted upon by the pressure caused by the boat moving through the water upon an inlet fixed to the bottom of the boat. Every change in speed of course changes this pressure and the indicator is so calibrated as to record the speed in miles per hour. The instrument records by this means the speed *through the water* and not the speed over the bottom. The gauge itself is finely finished and the scale is large with a figure for each mile up to 15 m.p.h. The inlet is in the form of a bronze scoop made weedless, from which a small copper tube projects through the planking and is connected to the gauge by another copper tube. A small air cock is placed in the instrument and is used to bring the mercury to zero. This is necessary because a change in draft of the boat causes the gauge to read high or low as the case may be if not corrected, and opening this cock brings the mercury to zero. The standard instrument for 1911 is made with a cast iron base painted black, with a gauge plate of polished bronze. The price of the instrument, ready to install, is $10.

Fire-Ball Gas Tank.

A new gas tank has just been perfected by the Fire-Ball Gas Tank and Illuminating Co., Inc., of St. Louis, which is constructed of seamless drawn bronze of great tensile strength, lined with pure block tin and tested to an internal pressure of 750 pounds to the square inch, which is said to be three times the maximum pressure exerted by the gas. The tank is very light in weight and owing to a patented internal construction contains a large number of "light hours" through the use of a new gas solvent known as Terpeline. The tank can be detached and replaced in less than a minute without the use of wrenches or tools, and the valve and yoke connecting the tank with the lamps is constructed primarily to prevent leakage. No key is required to control the flow of gas, the small wheel shown upon the top of the valve serving this purpose. The light may be turned as low as desired and the flow of gas will be so steady that there will be no danger of the light being extinguished. The gas is of the same temperature under all atmospheric conditions, the patented internal construction preventing thermal changes, and the gas therefore retains its normal density at all times. The tanks are made in three sizes containing 10, 40 and 100 cubic feet of gas respectively, and sell for $12.50, $30 and $60. The brackets cost $3.50 per set and are specially designed to harmonize with the finish of the boat. When these brackets are used tools are unnecessary in attaching or detaching the tank. The cost of recharging is 60 cents, $2 and $5 for the three sizes.

* * *

McClellan Auto Boat Tops

The frame construction of the 1911 McClellan top, made by Chas. P. McClellan, of Fall River, Mass., has been improved in a number of ways that make the top a more desirable addition to the equipment of the motor boat. The frames or bows are made of second growth white oak, oval shape, and are hand finished and highly polished. Attached to these bows are bronze metal slats, or bow fixtures, strong, shapely and of a special design. These fixtures have a special locking device and are positive in operation. The frame is attached to and operated on brass slide rods which are fastened by special fixtures to the deck and washboard and can be put on and taken off in a minute's time. The cover is made of 15-oz. Government standard khaki duck which is water and mildew proof. The spray-shield and curtains are made of 12-oz. khaki duck of the same grade and all curtains are detachable and equipped with pyrolin or celluloid windows. The curtain fasteners are of an improved type and are warranted not to shake loose. Although pyrolin or celluloid windows are furnished, they are so affected by the sun and water that they cannot be guaranteed for more than one season's use. They can, however, be replaced immediately at a very small cost. These tops are made in three styles, with four, five or six bows, ranging in price from $50 to $70, $70 to $87 and $85 to $106 respectively, according to size.

* * *

The Winter Battery.

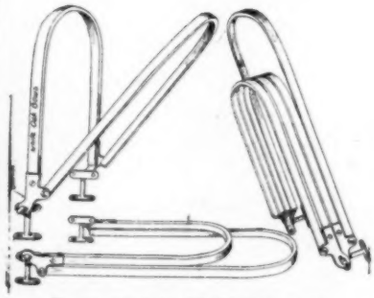
The Winter Non-Sulphating Battery, made by the Winter Battery Co., 1806 Michigan Ave., Chicago, has recently been improved until the product presents what is said to be a positive non-sulphating, non-collapsible and indestructible storage battery. A special form of grid and the treatment of the active material complete a form so compact that it will weather all vibration and jar to which a battery is subjected, and a process with which the active material is treated renders it insensitive to electrolyte except when the current is flowing. The battery can be used either for lighting or ignition, or both, and has an unusually long life upon one charging. It is made in a number of types, the 6-volt special, selling for $15; the 4-volt, 60-ampere hour, for $15; the 6-volt, 60-ampere hour, for $18; the 6-volt, 80-ampere hour, for $22; and the 6-volt, 100-ampere hour, for $27. In addition to these the battery is made in a dual service type to combine 4-volt and 6-volt in one battery, for the combination of lighting and ignition service. These have a capacity of 60, 80 and 100 hours at six volts, and cost $20, $24 and $29 respectively.

The Indian Spark Plug.

Chain Carbon Remover in Operation.

The Fire-Ball Gas Tank.

The Monarch Sliding Hood.



Bows used in McClellan tops.

The Winter Storage Battery.

Indian Spark Plug.

The Indian spark plug, made by the Templeton-Barrett Co., of Marinette, Wis., has lately been fitted with a new pipestone insulation chemically treated so that it cannot crack or soak up oil or soot. There are no flanges or discs to catch or retain oil in the lower barrel and the double insulation provides against the destruction of the plug should the upper core become broken. If one or more parts of the plug are broken or lost it is not necessary to purchase an entire new plug, since all parts are interchangeable and can be replaced at very slight expense. The price of the plug is $1 and with it goes a five-year guarantee.

* * *

Chain Carbon Remover.

The chain carbon remover shown in the accompanying illustration is made by E. S. Michener, New Castle, Penn., and is the same as the Bull Dog Carbon Remover which has been previously described, except that the name has been changed and the article has been so improved as to do better service. It is intended for four-cycle poppet valve, vertical gas engines of two or more cylinders and is operated by merely removing a spark plug and dropping the chain into the cylinder with a small amount of kerosene. The plug is then replaced, the ignition cut off, and the motor run from the power of the other cylinders for a few moments. The device consists of a flexible coil chain made of an unusually tough, soft wire, which is very flexible and absolutely harmless to the motor. The action of this chain scours every bit of carbon from the interior of the cylinder and it is blown out through the exhaust. The chain is easily removed by means of a wire hook provided for the purpose, and two cylinders can be cleaned at the same time by using two chains, one in each of the two cylinders where the pistons rise together. The price is 75 cents each or $2 for three chains.

* * *

Monarch Sliding Hood.

The Monarch Spray Hood is made by the Pneumatic Manufacturing Co., 526 17th Street, Brooklyn, N. Y., and is unusually easy to handle and of fine appearance. The frames are made of specially tempered hard brass tubing fitted into canvas pockets so they will hold their shape. The first four bows are hinged to brass plates, which are fastened to the side of the coaming and the rest of the bows have hinged carriers according to the length of the hood. These slide on brass rods and are fastened to the deck outside the coaming. To set the hood it is simply necessary to raise the last bow, pull the carrier backward on the slide, and the rest of the carrier will follow automatically. When one grommet on each side of the hood is buttoned to the side of the coaming the hood is ready for service. The hood makes a neat furl around the forward end of the coaming when dropped and either operation can be completed by one person within ten seconds. The single hoods in 8-oz. khaki range in price from $16 to $27 according to the size, and in 10-oz. khaki, from $17.50 to $30. The double hoods range from $38 to $48 and from $41 to $53 in 8 and 10-oz. khaki respectively. All hoods are fitted in front with an opening covered by a flap equipped with a celluloid window.

* * *

Light Weight Thermex.

The Thermex Silencer, made by the Thermex Silencer Works, 109 Summer St., East Boston, has been brought out in a new design known as the light weight Thermex which is one of the lightest and most complete mufflers made. It is made wholly of bronze and sheet copper and cannot rust out. The muffler may be used with either two or four-cycle engines and may be attached to either atmospheric or under-water exhaust. It can be placed in a fore and aft or a thwartship position in the boat as long as it is placed level and well above the water line. All the circulating water is piped into the top of the Thermex and a full-size open drain is run from the bottom through the bottom of the boat. The exhaust can be discharged through any convenient opening in the stern, preferably parallel to and just above the water line. The price of this new size is $12.50 for a 1¼-inch exhaust pipe and $13.50 for a 2-inch exhaust.

Auto Craft Silencer.

The Cleveland Auto Boat Mfg. Co., of 1037 River Avenue, N. W., Cleveland, Ohio, have just introduced a patented device designed to eliminate all noise from the exhaust of the motor and to do away with grease, smoke and pounding without in the least retarding the speed or decreasing the efficiency of the motor. The outfit is neat in appearance and can easily be installed in any boat carrying engines up to 40 h. p. The illustration shows its operation and method of installation. The price of the complete outfit is less than many high-class mufflers, the cost being $10 for a fresh water and $12 for a salt water outfit.

* * *

Carbo-Light.

The Carbo-Light tank generator shown in the accompanying illustration is made by the Carbo-Light Company, of Anderson, Ind., and is built of steel. It is six inches in diameter and 22 inches in length, with no rivets in its construction, all parts being welded together. The tank is composed of two compartments, the smaller being for water and the larger to receive the charge of carbide in which the gas is generated and carried. When the carbide chamber is filled, the gas enters a small brass tube connecting the two chambers and as the pressure increases, pushes its way through the water and bubbles up to the top, continuing this until the top of the water chamber has the same gas pressure as the larger chamber. The gas is used from the larger chamber, not from the smaller one, and it can be clearly seen that water is fed to the carbide only as fast as is necessary to produce the proper pressure. The total cost of operating two lamps with this system averages a trifle more than one cent per hour and the quality of the light produced is highly satisfactory.

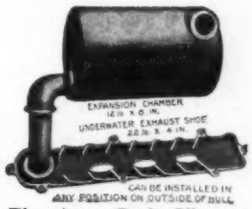
* * *

Seaman Binnacle Steerer.

The binnacle chain steerer shown on this page is manufactured by the Seaman Motor & Launch Works, Long Branch, N. J., and is built of polished metal throughout. It is in all respects a complete and self-contained binnacle and has a simple and positive locking device. The lower casting, which carries the adjustable lead blocks, can be bolted directly under the deck or lowered down under the floor. By loosening the nuts and adjusting these blocks the tiller ropes can be run at any angle from 45 degrees forward to direct aft and from perpendicular to horizontal. This does away with the old and noisy rack, the instrument being ready for business as soon as it is bolted to the deck. The complete outfit includes a polished brass wheel, binnacle and liquid compass.

Seaman Binnacle Steerer.

The Indicator of the Dyneto System.



The Auto Craft Silencer.

The Carbo-Light Generator.

Dyneto Lighting System.

The Dyneto electric lighting outfit is made especially for motor boat use by the Dyneto Electric Company, of Syracuse, N. Y., and consists of a dynamo, a storage battery and a rotary switch. The Dyneto dynamo proper is a new electrical machine and will run at any speed without burning out. It is operated without a governor or rheostat and is connected direct to the engine or shaft with no attachments that need attention. This machine develops sufficient current to charge a 3-cell 6-volt storage battery from which the electricity may be used for searchlights, cabin lamps, portable lights, electric cooking devices, signals, etc., in addition to the regulation sailing lights. The capacity of this battery is sufficient to run signal and safety lights when at dock for 50 hours and it is a simple matter to recharge the battery by starting the motor. When the Dyneto is running the current is supplied direct. No governors or rheostats are necessary with this equipment, so there is no need for an expert electrician. The price complete is $100, or $75 for the Dyneto without the storage battery.

* * *

The Hoyt-Light System.

A new system of electrical illumination for motor cars and motor boats has just been placed upon the market by the Hoyt-Light Sales Co., of Indianapolis, and the system is very advantageous, since it embodies a mechanical device which automatically controls the output of current. The Hoyt-Light system includes a generator and a battery, the generator charging the battery for a certain definite amount of time with a certain definite amount of current. When the battery has been properly charged, the flow of current is automatically shut off by the operation of the automatic control, and when it is desired the lamps may be lighted by pressing a button located on the control. This control is mounted on the bulkhead and allows the current to flow at a definite and unvarying rate, whether one or all of the lights are burning. When the current stored in the battery has been exhausted to a certain point the automatic control again turns the flow of current from the generator into the battery and the charging process is repeated. The result is a constant and steady light of great brilliancy.

Dubuque's Big Regatta.

Something About the M. B. P. B. A.'s Big Annual Meet and the Plans That Are Being Made. The Cruises That Will Start From the North and South and End at the Regatta.

By St. C. Ede, Commodore D. M. B. C.

I BELIEVE it is as justifiable for a boat enthusiast to brag as it is for a fisherman. We take these two types of red-blooded humanity with more charity than the devotees of any other sport. We naturally expect more or less exaggeration from them because of their intense enthusiasm. But now and then a man tells the truth about the big fish, the speed of his boat, or the immense regatta that is coming. Instead of his story getting full face value, it takes the usual discount. When we were given the M. V. P. B. A. regatta we let our justifiable enthusiasm loose on a staunch and conservative business community. The results were not discouraging, but they were slow. We had to catch a citizen, as it were, and brand him with the club stamp. An injection of enthusiasm never failed to bring results, and suddenly Dubuque came to realize that she had before her the biggest event in her history since old Julien Dubuque came down the river and opened the mines of Spain.

Situated about midway in the driftless area, Dubuque has long been famed for the beauty of her location. Because of this and the natural hospitality of the people, she is an ideal city for conventions and large gatherings. When she realized what the regatta meant, she went to work to find means of taking care of the crowd; a list of all available rooms is being made and official guides will lead the stranger to a place to sleep and eat, providing he is so disposed. The programme does not provide for a great deal of waste time. All available camping sites are being secured for the boats that will cruise here. Supply boats will keep the camps stocked with provisions. The Standard Oil Co., has guaranteed to sell gasoline at 10.7c. per gallon; the Iowa Oil Co., at 11½c. per gallon. Cylinder oils and greases will be sold at the regular prices. No detail that would cause the stranger disappointment has been overlooked.

Up to the present time we have 19 boats entered in the four big classes: Three are from St. Louis; one from Savannah; two from Bellevue; two from Chicago; one from Winona; one from Rochester, N. Y.; one from Bay City, Mich.; two from La Crosse; one from Beaver Dam, Wis.; one from Joplin, Mo.; one from Fort Madison, Iowa; one from Peoria, Ill., and two from Dubuque.

We have an ideal river course. The grandstand will be built just south of the harbor on the levee front. It will have 260 boxes and other seating space for 5,500 to 6,000 people; it will contain 121,000 feet of lumber. The judges' stand will be directly in front of the grandstand. The race will start north for ½ mile, turn to port around the red barge and red flag, and then south for 2½ miles and back to the starting point. This course has been surveyed by the government engineers, and sounded every 50 feet crossways of the river, and every 300 feet up and down stream. At the present time we have unusually low water, but there is 11 ft. 6 in. in the thinnest spots. The current on this course is gentle, and one particularly attractive feature is that boats will always be in sight of the spectators.

We have not fallen down altogether on the publicity end either. For the past four months a syndicate of 187 papers has been printing weekly stories, a number of them illustrated. An immense amount of interest has been aroused in the whole Mississippi Valley through the valuable assistance of this syndicate. The present indications are that we shall be called upon to entertain between 30,000 and 50,000 people.

So much for regatta affairs at Dubuque; now for the plans of other cities along the Mississippi, Illinois, Ohio, Missouri, and the Great Lakes. A notable cruise is being planned that includes nearly all of these cities. From the North the boats will start from St. Paul

(Continued on page 72.)

Activities on the Pacific Coast.

(*Continued from page 5.*)

rumors that he and his friends will bring a faster one from England to compete at Astoria. Mr. Spencer took Comet out for its first long distance trial sprint some time ago and the result was most satisfactory. Through a lumpy sea and rough breakers for a part of the way the 31-footer covered the 78 miles each way from Vancouver to Victoria on an average of 21.25 miles an hour. The time made was a record over the course for boats of her character and narrow beam. On runs under more favorable conditions 29 miles has been recorded.

The speed enthusiats of the west coast do not expect to equal the performances of the semi-displacement and hydroplane classes which are predicted for the big international race scheduled for Huntington Bay, Long Island, and they are not talking in terms of over 50 miles an hour as is being considered for this blue ribbon event, but they do hope to present something startling in the straight displacement classes at the Astoria championship races.

Lack of interest on the part of the yachtsmen owning fast cruisers is given as the direct cause of the small list of entries in last year's Alaska to Vancouver, B. C., long distance race. This can be discounted to some extent because it was the first attempt at running the race and because Alaska waters were somewhat untried as a racing field. How many boats will enter this year when the race starts in August cannot be forecasted. Last year's race showed that there is no better course on the coast for a contest between cruisers and considerable comment has been heard during the past few months along the lines that there will be nearly a dozen boats in line for the run this year.

The same course which was described in MoToR BoatinG a year ago will be the scene of the event this year. The starting point will again be Ketchikan and the other stake boat will be at some port on Puget Sound not yet determined. The three boats which ran the course last year struck ideal conditions and few of the usual bars to easy navigation such as fog, smoke, glacial ice or débris were encountered. The race will be run at practically the same time this year in order to take advantage of the open season, which will probably give the same weather conditions as Limit and her competitors hit in 1910.

There is one thing that is most apparent and that is that the Alaska motor boating fraternity has no lack of enthusiasm in the event and are prepared to give the participants in the race a royal welcome during their stay.

"Power craft," as Captain A. W. Thomas, of the Ketchikan Motor Boat Club puts it, "are a necessity in all walks of life up there from business to calling at the next island for one's girl." In supplying this necessity the boat builders have found that Alaska does not take all work boats, but that the pleasure craft figure pretty strongly. Probably a majority of the boats in the Alaska waters are used in business and only a small proportion in "calling on one's girl," but a big majority of the craft are good looking little vessels and have been built with as much thought for the outboard lines as for their ability to do service in tow-boat work or any of the hundred and one things that Alaska puts them to. The town of Ketchikan where the Alaska race will start has a population of only 2,000, but the motor boating enthusiasts are now building a $20,000 club house that will eclipse anything on the Coast. This will be given its first real house warming when the cruisers arrive from the South to enter the race.

Aside from a cup which has been offered by A. V. Comings to the winner of the race and which is now held by Limit, a purse is in the making which will be a substantial reward for the first, second and third boats to cross the finish line in Puget Sound. The race will be open to all bona fide cruisers over 40 feet in length and will be governed by the P. I. P. B. A. under its regulation handicapping formula. The usual rules for the carrying of fuel, aids to navigation, etc., commensurate with the distance the cruisers will have to run will also be enforced.

The other big event over which the P. I. P. B. A. will assume the power is the annual international long distance cruise on Puget Sound—the Marblehead race of the Pacific. This year's race will start at Vancouver, the course leading down through the San Juan Islands, to the Strait of Juan de Fuca, to a stake boat in Seattle harbor and then back again to finish at Victoria. The race is timed so that it will finish in the midst of the international regatta, which is scheduled for July 1-5, and the participants will as in former years be entertained by the Vancouver Island people.

An experiment was made last year in this race with the actual performance method of rating in force with the measurement handicap system. The actual performance trial resulted in a failure as the rating under that system had been made after the boats had turned their highest over a measured mile which was in comparatively still water and was unaffected by the tides. When the time came for the system to be worked out on the Sound with its variable tides and some unfavorable racing conditions the rating figures were knocked to smash and all but three boats came in so far ahead of their set time-limit that they had to be disqualified.

This year another experiment will be made and on the face of it should prove very satisfactory. The experiment this year will be the giving of each skipper a lee-way of six hours in which to start his craft on the run and it is doubtful if any two boats will start at exactly the same hour. The measurement handicap system of rating will be used by the P. I. P. B. A. The entrants will be thrown a good deal upon their knowledge of the tides in the Sound and of the navigating conditions and each captain can choose any time within the prescribed six hours that he thinks will give him an advantage. The results will be figured at the finish with full allowance for ratings and time of starting. As this system of starting the boats will bring out all that the captains know of tides and navigation as well as show their ability to handle their craft, the experiment should prove a success. A few new boats are expected to enter the race this year and the most of these will probably come from Vancouver which has the motor boating fever in earnest just now, but the last year's racers are also attracting interest because a majority of them have had their engines replaced by larger ones and many claims of fast time are being made. A new one from Tacoma which was the starting point of the race last year will be Commodore B. F. Jacobs' Corsair, which is practically a duplicate of Ilys, the well-known racer of Commodore J. G N. Whitaker, of Philadelphia.

With the appearance of this issue of MoToR BoatinG another race which has attracted considerable attention on Puget Sound is being run—the Doman cup race from Tacoma to Seattle and return. Practically all the fast cruisers on the Sound have been entered in the race which is the second of the annual Memorial Day event as now scheduled at the Seattle and Tacoma Yacht clubs. Next to the Long Distance race this is the most important annual event on the Sound and is in direct charge of the Seattle club to which was presented the Doman Perpetual Challenge cup. The cup was won last year by Marana and she has been entered again to defend the trophy. The course is 58 miles in length and makes a good day's cruise for the yachtsmen. It is run under P. I. P. B. A. rules and is open to any boat over 25 feet in length.

Aside from the Astoria events two other cities have included power boat races as stellar attractions for big celebrations which they will hold. Officials of the Portland (Ore.) Rose Festival which takes place the first week of this month have given their support to what will be the biggest water carnival ever held on the Willamette River. The members of the Portland Motor Boat club and the Oregon Yacht club had an easy time showing them how much good a number of races would do in promoting the festival each year and, as no city in the West allows a chance to advertise itself slip by, a number of cash prizes were hung up for the speed boat contests and other events. If the new Wolff speedster should be put overboard to contest in the Festival events there is no doubt but that the news will bring a large gathering of racing motor boat men into the city within a few hours as all are anxious to see it cut the water.

On July 16, 17 and 18 the motor boats will center at Seattle when it celebrates its Golden Potlatch Jubilee and all classes of craft will contest for large cash prizes. The details of the races for these days have not been worked out as yet, but they are sure to bring a number of the new boats from all along the coast together for tryouts. Seattle has exceptional opportunities for staging motor boat races as it has a large frontage on both Elliott Bay and Lake Washington, the latter an ideal place for speed events. The Seattle Yacht club has shown an entirely new spirit this year in its enthusiasm in getting up events in which its members are brought together, and aside from entering a majority of the races already mentioned will make several club cruises, including the annual run to Olympia under the handicap power boat rule for the Olympia cup.

The other Sound cities—Tacoma, Everett, Bellingham and Olympia—have all seen more boats added to their fleets this year and each has a number of racing and cruising events scheduled. Tacoma has made a number of improvements around its quarters among the most important of which was the building of a marine railway. The Everett club is now building a commodious clubhouse and has established a superior anchorage on the Snohomish River. The club has also remodeled its marine ways and can now draw the largest craft out for an overhauling.

The Portland Motor Boat club has just about finished a new clubhouse on the east bank of the Willamette and is preparing for a vigorous season. Portland has long needed a clubhouse and her motor boat club is now on a plane with those of Seattle and Astoria. Portland people are taking much interest in the motor boating game and within a short time it is predicted that the Rose City will have more craft to her credit than any other city on the North Pacific Coast.

In the cities of California the interest never ceases and all the clubs have a full list of races scheduled for the summer. April 30 was the official opening day for practically all the clubs although a number of races had been held during the winter months. The Corinthian and San Francisco Yacht clubs have scheduled motor boat races for as late as October 2 and October 9 respectively and according to their schedules some months have as many as 15 days given over to events of some nature. July 4th and other holidays will see interesting contests at all the California cities as well as on the waters of Puget Sound.

Up in British Columbia the yacht clubs have full programs, but the game is being given a small set back by the coronation ceremonies in England. This may seem a peculiar statement in view of the fact that British Columbia is on the opposite side of the world from England but ask any prosperous Canadian, "are you going to the coronation?" and the reason is plain. The Royal Vancouver Yacht Club has a full list scheduled, however, for the summer and more than a dozen races and cruises will be held.

Motors for Motor Boats.

The Two-Cycle Wayne.

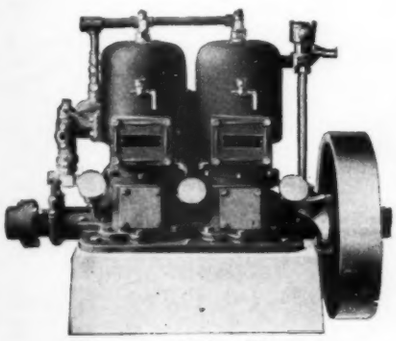
The Wayne Motor is a two-cycle three port motor, the outcome of a number of years of experimenting and developing, built to embody the four water-craft engine essentials, Reliability, Economy, Simplicity and Power.

The ease in starting the Wayne Motor is one of its greatest features. The single cylinder motor ordinarily starts by simply rocking the flywheel against the compression, while the two-cylinder motor can be started on the spark nine times out of ten.

The fuel consumption is particularly low, due to the careful design of the ports and the by-pass adjustment, every ounce of compression and particle of gas admitted to the cylinder being used and returning full power for fuel consumed.

All parts are interchangeable and the bearings may be replaced without making it necessary to get at the base of the engine and have the bearing babbitted, reamed and scraped. The bearings are long and are securely reamed. This gives a good base compression which is very essential to the efficiency of a two-cylinder engine.

Another feature of this motor is the extreme accessibility. The Wayne has three large hand-hole plates, two of which give easy access to the connecting rod bearings, and the third covers the large by-pass. The cylinder is securely fastened to the top half of the base by use of machine cap screws. By separating the cylinder from the top half of the base it is possible to remove the cylinder without disturbing any of the moving parts of the motor. Another important feature on this new motor is the commutator and timer combined. It has been said to be the simplest timer on the market and was designed by the company's own engineers. The device is operated from the main shaft by a pair of bevel-cut gears which are covered with a neat aluminum case. This timer and commutator enables the spark to be advanced or retarded by moving the outer case around a circular sector, and it also enables the operator to run the engine in either direction and to reverse the motor while in motion. This new motor is being manufactured in Detroit, a new company having been formed with Mr. Charles W. Cross, president; Mr. Walter H. Woods, vice-president, and Mr. Alpheus Collins secretary and treasurer.

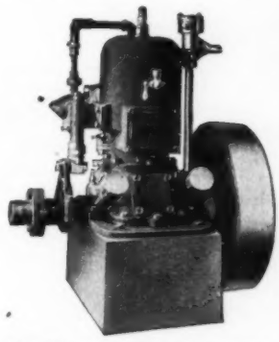


The two-cylinder Wayne.

A New Buffalo "Six."

Sold before the designs were finished, many of the new six-cylinder engines brought out this spring by the Buffalo Gasolene Motor Co., Buffalo, N. Y., are being installed in speed boats of the lighter class, and their owners expect results on a par with the creditable showing made last year by its sister engine the 25-h.p. "Auto-Marine."

The principal difference between the 25-h.p. Auto-Marine and the new "Six" is that the latter has six cylinders instead of four. It is an extremely light but at the same time substantial engine. With a bore of 4¾ inches and a stroke of 5 inches it is rated 40-h.p. at 800 r.p.m. The new engine follows the general lines of the 25-h.p. "Auto-Marine" which was brought out last year, with a few minor differences.



The Wayne two-cycle motor.

For one thing it is equipped with a new style of rotary circulating pump which cuts off almost all the wear common to this style of pump and at the same time retains all its advantages. The oilpan is extended back enclosing the clutch, which keeps the oil in the oilpan and away from the rest of the boat. The "Six" has the same "positive drive" clutch and locking device as the four-cylinder engine, with the added advantage of a "positive" disengaging device which eliminates any possibility of having to tug to unlock the clutch.

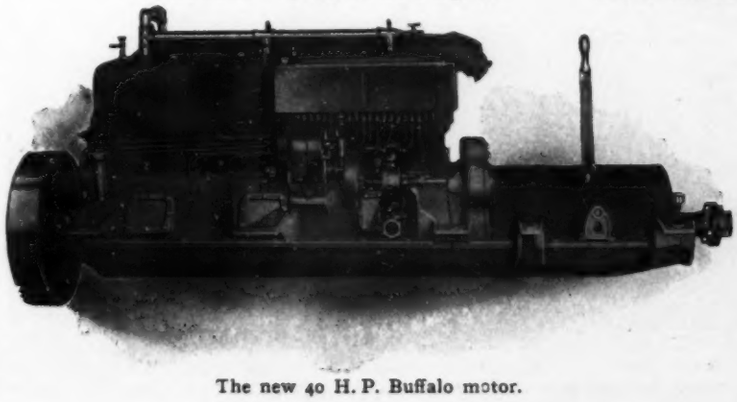
The cylinders are cast in pairs with complete water-jacketing and water-jacketed exhaust. The motor is equipped with gear driven Bosch magneto, double ignition, Schebler carbureter, force feed lubrication and Buffalo ring oilers. Practically all the working parts are enclosed and the simple exterior lines make the motor very easily cared for.

The Sterling Heavy-Duty.

The Sterling Engine Company, of Buffalo, N. Y., anticipating a large demand for a more powerful heavy duty engine as a result of the wonderful performance made by boats equipped with Sterling engines at Palm Beach, Florida, last March, has made announcement of the fact that they now have, ready for the market, a 100-h.p., heavy-duty engine, having eight cylinders, with a bore of 6½ inches and a stroke of 8 inches. It develops its rated power at a speed of 400 r.p.m.

The same material, workmanship and methods of construction are embodied in this new size engine as are found in all Sterling engines.

This new size belongs to the well known Sterling, heavy-duty group, which includes a two-cylinder, 20-h.p., a four-cylinder 40-h.p. and a six-cylinder 60-h.p., which with the new eight-cylinder 100-h.p., gives this company a range of sizes for heavy-duty requirements in large cruisers and work boats that will enable them to take care of any proposition within the limits of power of these engines.



The new 40 H. P. Buffalo motor.

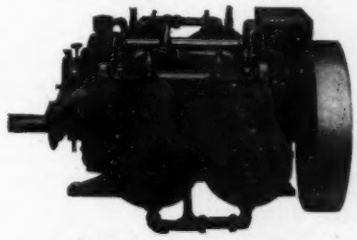
The Hall Opposed Motor.

Mr. Robert S. Hall, president of the Hall Gas Engine Mfg. Co., of Byesville, Ohio, reports that his company have been very successful with their line of opposed motors. Mr. Hall is the designer of the engine, and is himself a practical boatman, having owned a launch on Lake Michigan for ten years. He was in the repair business for some time, where his experience was valuable chiefly in the features which it taught him not to put into an engine when he designed one.

The Hall opposed engine is built in both two and four-cylinder styles, and ranges in size from 3 to 50-h.p. The illustration shows an end view of the four-cylinder motor.

Mr. Hall claims for this engine a degree of smooth, steady running which is not always obtainable. For instance, a full glass of water can be placed on top of the engine when it is running at a speed of 800 r.p.m., and not spill a drop. Mr. Hall states that he has taken a new lead pencil and placed it on end on top of the engine, while in operation, and the pencil remained standing until he removed it. These are vibration tests that are worthy of consideration.

This absence of vibration is due to the mechanical and explosive balance of the engine. The cylinders are set opposite each other, so that the crank, connecting-rod and piston in one cylinder are always in position to balance the crank, connecting-rod and piston in the opposite cylinder, or, in other words, for every part in the engine moving forward and backward, or up and down, or in any other direction, there is another part of exactly the same weight, size and shape, moving positively in the opposite direction. The importance of the absence of vibration cannot be over-estimated. Vibration is destructive to the life of the engine, and is exceedingly uncomfortable to those who are trying to enjoy a boat-ride.

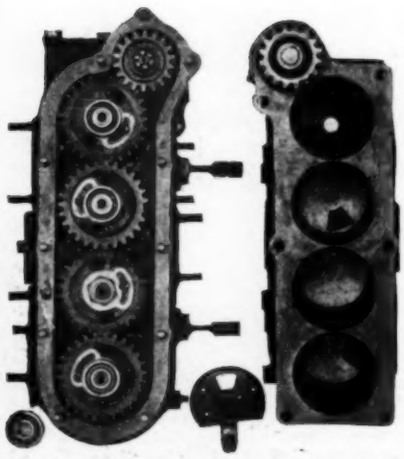


The Hall opposed motor.

One of the most popular features of this motor is the governor. All that is necessary after the engine is started, is to steer the boat and handle the reverse lever. Through the efficient method of governing the engine, the speed remains the same, whether the reversing clutch is in or out of gear. When the clutch is out of gear, which relieves the engine of its load, the governor automatically reduces the amount of gas taken into the cylinders, and when the clutch is thrown into gear the governor automatically opens the throttle, giving the engine more gas, thereby constantly maintaining the speed at which the governor is set. When running on the governor the engine can also be controlled by hand, without changing the adjustment.

Besides these advantages, the accessibility of working parts, durability, simplicity of operation, perfect lubrication and the uniform high quality of workmanship and material, make the Hall Opposed an engine of satisfactory and efficient service.

The company also make a specialty of their direct-connected electric lighting units, consisting of this motor, direct-connected to a generator. It makes a compact and efficient arrangement for lighting large boats and club-houses. They also build their opposed engines for general power purposes in several sizes.



Showing the rotary valve operation of the Reynolds motor.

Reynolds Rotary Valve Motor.

The rotary valve internal combustion motor is a design which has commanded some of the best engineering talent in the country, and the Patent Office contains hundreds of types. It has remained, however, for the Reynolds Motor Company, of Detroit, to produce one which is a commercial success, and the wonderful showing which this motor has already made in competition, has established its practicability.

The gears which drive the valves are keyed to the stems, and the nuts on top of the gears are locked by means of a very novel lock washer. A very unique feature in the design of this motor is the lubricating system; a force feed lubricator, driven from the cross shaft, supplying oil to each of the valves, through feed pipes, which connect with pipes cast in the cylinder cover. Their location is such that the oil is led through these passages and dropped into the top of each one of the valve spindles in such a way that it flows downward, lubricating the sides and face of the valve in a very excellent manner. The main bearings are lubricated by the splash system, the oil flowing down from pockets cast in the side of the crank case. A very clever arrangement is made for maintaining the oil level in the crank case when the motor is placed at an angle.

Other unique features are: a water-cooled exhaust pipe, a compact arrangement of water pump, magneto and lubricator; a short, well constructed ignition conduit; a large, stiff, two-bearing crank shaft, very light but well designed pistons and connecting rods, and an extremely accessible crank case.

The ignition includes an Eisemann dual system magneto and coil, a Precision force-feed lubricator, a well designed water gear pump, starting device and reverse gear. The entire piece of mechanism is complete for installation.

The bore is 3½ inches and the stroke 4½ inches; the connecting rod bearings are 1⅞ x 2⅝ inches, and the main bearings, 1⅞ x 3½ and 4 inches respectively. The flywheel is 14 inches in diameter, with a 4-inch face made in a dished shape which permits its being placed very close to the crank case. The entire motor is only 31 inches over all, and 28 inches high. Its weight complete, with magneto, is 370 pounds; its h. p. is from 15 to 20, at a speed of 750 to 1,300 r.p.m. All reciprocating and revolving parts are balanced with extreme care and the engines run with practically no vibration.

New Barker Type X.

The Type X Barker motor illustrated upon this page represents a very high development in two-cycle motor construction, showing originality and an improvement over other models.

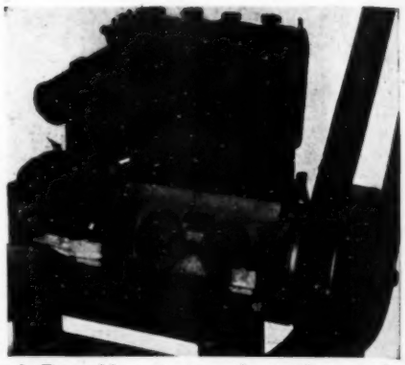
The cylinders are individually demountable and interchangeable with others for the same position, making it possible to install a new cylinder without removing any other; in fact, without dismounting the exhaust or intake pipes. Many details of the Type X Barker motor show it to be original and at the same time without freakish ideas of construction.

The "whip" make-and-break igniter on this motor has every advantage that any high or low tension system can claim and also is said to possess many additional points of excellence. It consists of a block containing an insulated pin and a removable lever to which

The new Barker motor.

is fastened a flat spring operated by a finger spring. The "whip" ignition is the most quiet make-and-break device on the market. It gives a maximum spark and has the same flexible and easy control of the best high tension system, the spark on any number of cylinders being advanced or retarded by a slight motion of a single lever.

Where a customer is willing to pay the additional charge, jump spark is also supplied; thus both high and low tension systems can be simultaneously used and controlled by the same lever, or either system operated independently. The spiral gears used in transmitting power from the crank shaft to the igniter shaft are distinctively novel and commendable. They are very simple and compact and are operated with practically no noise of any kind.



A Reynolds motor on the testing stand.

The motor is equipped with a super-heated dual charge inlet system, which presents a distinctive feature found on no other machine of its kind. From the carbureter the cold charge is drawn against the hot exhaust plate and converted into a much more dry gas than is possible to obtain otherwise. The advantage of the dual inlet does not end here. With the ordinary three-port motor no charge is taken in until the piston has very nearly reached the top of its stroke; whereas, with the dual inlet system used on the Type X Barker a charge is received during the entire upward travel of the piston.

With the dual charge inlet equipment is furnished when requested a Y fitting (not shown in cut) one branch of which has a gasoline and the other a kerosene carburetor. After the engine has run a minute or so the exhaust plate becomes heated and kerosene oil may be substituted for fuel in place of gasoline.

The Dual Charge System has all the commendable features of both the two-port and the three-port types, at the same time furnishing a drier mixture and making possible the use of kerosene as well as gasoline for a fuel.

The Heavy Duty Bevier.

The Bevier Gas Engine Co., of Kalamazoo, Mich., are building an attractive line of heavy duty marine engines in sizes from 20 to 200 h.p. These motors are built for real service and show a type of construction and a smoothness in operation that is very desirable. The lower base has a bearing between each crank, the bearings being supported by a solid casting which stiffens the base as well. It also forms a partition that holds an equal quantity of oil under each crank regardless of the angle at which the engine is standing. This base has a ¼-inch oil flange and oil-tight bearings at each end, that keep oil from the flywheel and reverse gear. The base is bored to receive interchangeable bearings.

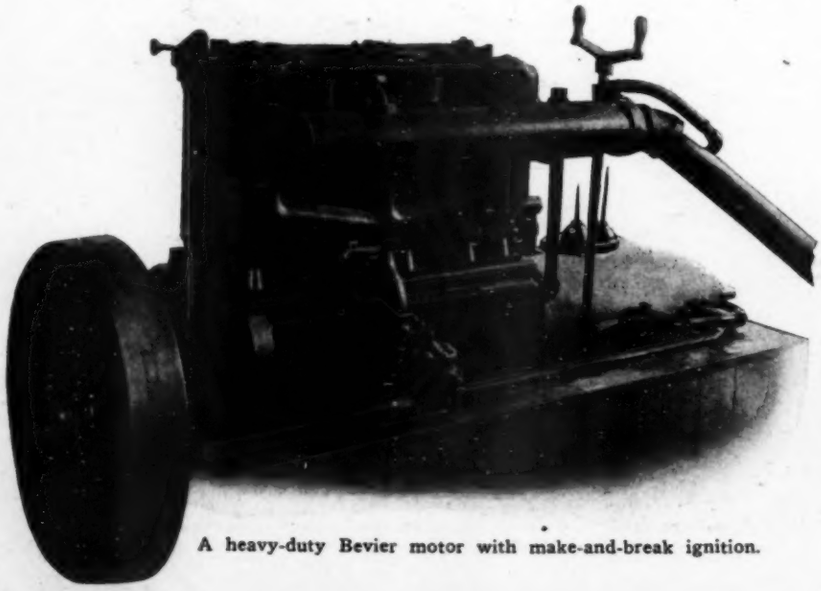
The crank and cam shaft bearings and connecting rod boxes are made of phosphor bronze and lined with genuine nickel babbitt.

The reverse gear is operated by a handwheel, while the cover is arranged to hold an oiling set. The banjo lubricating system guarantees perfect lubrication to every part. All motors having cylinders measuring 9½ x 11 inches and larger are furnished with self starters.

The Bevier engines are sturdy, have a wide range of speed and power, and are said to be reliable and efficient, as well as durable and economical. They will operate equally well on alcohol, fuel oil, kerosene or producer gas. The equipment includes a carbureter, magneto, spark coil, batteries, switches and wire; a suitable propeller, propeller shaft, stern bearing stuffing box, reverse clutch, muffler, air compressor pump, case-hardened wrenches and oil cans.

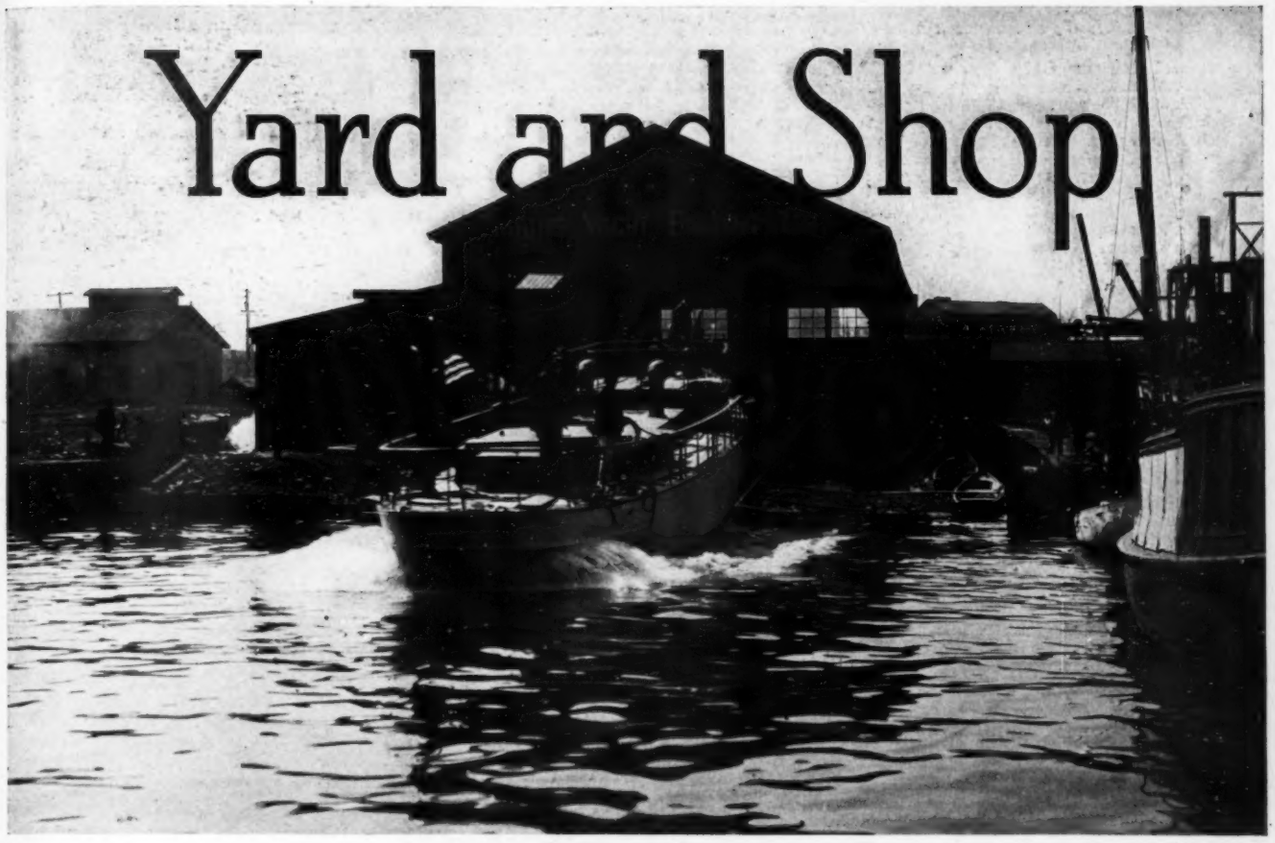
The connecting rods are made from machine steel forgings having 75,000 pounds tensile strength. While these are more expensive than other types they are more reliable and much lighter. The gears that operate the cam shaft on an angle which adds strength, reduces wear and makes their operation noiseless. The cam shaft can be removed without loosening or removing the cams.

Make-and-break ignition is furnished on all engines unless otherwise specified. All parts of the Bevier engines are adjustable to wear and easy of access for examination or repair and are interchangeable.



A heavy-duty Bevier motor with make-and-break ignition.

Yard and Shop



A Ferro Photographic Contest.

The Ferro Machine & Foundry Co., of Cleveland, O., have instituted a contest which will be of much interest to motor boatmen, especially those who possess cameras, as doubtless a majority do. Any kind of pictures including motor boats and boating scenes will be considered, particularly striking pictures that tell a story by themselves. The provision made is that boats included in these pictures shall be equipped with Ferro motors, although, of course, in a group of boats it is not necessary that all be equipped with Ferros. The contest is open to everyone whether Ferro owners or not and three valuable prizes are offered. The first is a 3 h. p. Ferro outfit complete, ready to install, including reverse gear, propeller and shaft, etc., with all the ignition equipment. This outfit is valued at $100. The second and third prizes are a Bosch high tension magneto valued at $46 and a Ferro reverse gear valued at $28 respectively. Incidentally, it might be added that the Ferro Company announce that there are still a few good locations open where they have as yet no representative or dealers handling their marine engines.

Mullins Boats in Canada.

During the season of 1910, W. H. Mullins Co., of Salem, O., makers of Mullins steel boats, shipped over 40 carloads of their product across the border into Canada and a strong sales organization has been built up in that country. A line of agencies now extends from Halifax on the east to Vancouver on the west and large stocks are carried in the principal Canadian cities. A large shipment of launches was recently sent to I. L. Lafleur, their Montreal agent, who has been very successful in the sale of these boats in the vicinity of Quebec. Mr. Lafleur is located at 362 Rue Notre Dame Ouest, Montreal, and carries a complete line of marine engines and supplies as well. Four carloads of Mullins boats were also recently sent to the J. C. Shadegg Engine Co., of Minneapolis, a company which has handled Mullins boats in Minnesota for a number of years.

Atlantic Company's Service Department.

Along the line of the progressive policy of the Atlantic Company, they maintain for the convenience of their customers Service Departments in New York and Boston salesrooms as well as at the factory. Very complete equipment of spare and repair parts are carried in stock, and the service of a competent mechanic is always available on short notice.

The Engines of Kingfisher.

Among the reasons "Why Kingfisher Makes Good," as given upon page 40 of the issue of this magazine for May, 1911, the author neglected to mention that the fact is due, in part, to the type of motor. We have had inquries in regard to this and for the benefit of our readers we are glad to add the information that the craft is equipped with two 80 h. p. Globe engines, built by the Pennsylvania Iron Works Company, of Eddystone, Pa.

Boats for the U. S. Life Saving Service.

A short time ago the U. S. Live Saving Service, at Washington, D. C., opened bids for the building of 12 36-foot self-righting, self-bailing power lifeboats and the contract was awarded to the Electric Launch Co., of Bayonne, N. J., whose bid was the lowest and who offered to build the 12 boats in 200 days. The boats will be similar to those previously built for the Department but will include several improvements. The construction will be of solid mahogany and heavy bronze keels and centerboards will be used. The boats will depend principally upon their sail power, but for manœuvering around wrecks, etc., a 40 h. p., 6 cylinder motor will be installed in each. The contract will be completed and the boats placed in commission before the end of the year.

Eclipse Motor Company Moves.

The Eclipse Motor Company which has been manufacturing marine engines at Mancelona, Mich., has been removed to Traverse City, Mich., where the business has been very materially increased. The motors are built in seven sizes, a 1 h. p. for canoes and small rowboat launches, and a 2½, 3½, 4½, 5, 8 and 10 h. p. size in both single and double cylinder types. Brownlow Starbuck, a well-known gas engine expert, is the designer of these motors.

The assembling room of the Reynolds Motor Company, of Detroit.

Caille Motors in Philadelphia.

The Caille Perfection Motor Company, of Detroit, makers of "Perfection" engines, are carrying a stock of motors in Philadelphia through an agency handled by Carman & Bowes, of the Bourse Building

Both members of this firm are experienced gas engine men and a complete line of motors is carried.

Wolverine Lubricants Company Growing.

In order to meet the increased demand for their oils, and to insure the trade of prompt deliveries, the Wolverine Lubricants Company of New York, with main offices at 80 Broad Street, have established branches and warehouses at the following places, where a full line of Packard Oils as well as Wolf's Head lubricants may be obtained: Chicago, Ill., 1402 Michigan Ave.; Boston, Mass., 224 Milk St.; Philadelphia, Pa., 119 N. Front St.; Atlanta, Ga., 184 Marietta St. In all probability they will also, within a short time, have distributing stations at Washington, D. C., and other important centers.

Motor Boat Insurance.

The Insurance Company of North America, of Philadelphia, have made a specialty of motor boat and yacht insurance and are issuing a liberal form of policy which will appeal to all boat owners. This policy includes a broad field and covers accidents of all sorts whether from fire or storm. The cost of the policy is but a few cents a day.

Marguerite at 34 m. p. h. See item in this department.

New San Francisco Agents for the Anderson.

The Anderson Engine Company, of Shelbyville, Ind., have appointed E. P. Jamison & Co., of San Francisco, agents for the Anderson engine.

Monel Metal for Propellers.

The Bayonne Casting Co., of Bayonne, N. J., are quipping a number of this season's racing boats with propellers made from Monel Metal, an alloy of nickel and copper with other elements in small percentage. This is said to be a natural alloy and is mined in Canada from a supply which appears to be practically unlimited. The advantage of this metal for propeller construction is the fact that it will take as high a polish as nickel and will retain it indefinitely even in salt water. Its modulus of elasticity is about 50 per cent. greater than that of bronze, which means that a propeller made from it will retain its pitch under the most trying conditions. The motor boat Gunfire II has made many of her most notable records with a Monel Metal propeller and it is said that the new Heckscher syndicate boat designed and guaranteed for 45 m. p. h., will carry twin Monel Metal screws. The metal is also used for deck fittings, pump fittings, etc.

A Cleveland Supply House.

The Motor Boat & Supply Co., 1520 Columbus Road, Cleveland, O., have taken the agency in their territory for the Davis dink and the Waterman marine motor. The concern deals exclusively in everything for the motor boat and carries a large stock of marine hardware.

Texas Company Adopts a Gasoline Flag.

The Gasoline Flag adopted by the American Power Boat Association, consisting of a rectangular white flag with a black cross running vertically and horizontally, has been adopted by the Texas Company and will be flown at all gasoline supply stations situated on the water front as rapidly as the flags can be secured and placed, so that the owners of motor boats will be able to distinguish such gasoline stations readily in passing.

A New Western Flyer.

The Lamb Boat & Engine Co., of Clinton, Iowa, have under construction for Commodore W. E. Hughey, a hydroplane of Fauber design, 36 ft. 10 inches in length with a beam of 6 ft. 3 inches. The two motors are of the two-cycle type, have eight cylinders and develop 150 h. p. each. Commodore Hughey, who is one of the most enthusiastic yachtsmen in the Mississippi Valley, names all his launches "Red Top," after his mines in Goldfield, Nev., and he charters two cars during each yachting season, one for use of himself and his friends and the other for Red Top and her crew. In this manner he covers the entire racing circuit of the west. The new boat is built entirely of mahogany and is expected to be ready in time for the races at Dubuque upon July 4th.

Cleveland Auto Boat Co. Increase Plant.

The Cleveland Auto Boat Mfg. Co., of Cleveland, O., manufacturers of high class launches, have greatly increased their facilities and capacity during the past winter and a large stock of special models is now on hand ready for delivery. Among the more important improvements to the 1911 product are metal air tanks beneath the fore and aft decks and the Auto Craft silencer and under-water exhaust. Their 1911 catalog contains a frontispicce; a hitherto unpublished picture of Capt. Larsen.

(*Continued on page 71.*)

JUNE.

COLUMBIA YACHT CLUB OPEN RACES: June 10. A. P. B. A. handicaps, all classes. Club course, start off club house, 86th St. and Hudson River, New York.

NEW YORK MOTOR BOAT CLUB: June 11. Sealed order races.

BERMUDA RACE: June 17, 2 p. m. This race will start from the flagship of the Motor Boat Club of America, which will be anchored in Gravesend Bay, New York, and the finish will be off St. David's Head, Bermuda.

BLOCK ISLAND RACE: June 17. Eighth annual, of the New York Athletic Club. Huckleberry Island through Long Island Sound to Block Island.

ROYAL VANCOUVER YACHT CLUB: June 17. Cruising race from Vancouver, B. C., to White Rocks and return.

WATERWAY LEAGUE OF NEW JERSEY: June 17 and 18. Cruise to Jamaica Bay, L. I., rendezvous with the Waterway League of Greater New York and Long Island.

NEW YORK MOTOR BOAT CLUB: June 18. Tarrytown Light race.

PORTLAND, ME., POWER BOAT ASSOCIATION: June 22. Cruise to Boothbay Harbor.

JULY.

NEW YORK TO ALBANY AND RETURN: July 1. Annual race of the New York Motor Boat Club. Start 6 p. m. Open to all motor boats, except automobile boats, less than 40 feet over all.

CAPE MAY RACE, NATIONAL YACHT CLUB: July 1, Brooklyn, N. Y. Cruisers, 40 to 80 feet. A. P. B. A. handicaps. Start Gravesend Bay, Scotland Light Ship, Fire Island Light Ship, North East End Light Ship, Fire Island Light Ship, finish off Scotland Light Ship. Distance, 318 miles.

PACIFIC INTERNATIONAL RACE: July 2. Long-distance cruising race of the Pacific International Power Boat Association. Start from Vancouver, B. C. Distance, 235 miles.

NEW ENGLAND ENGINE AND BOAT ASSOCIATION: July 4. Fifth annual open motor boat race for the championship of New England, held off the club house in Boston Harbor.

MISSISSIPPI VALLEY POWER BOAT ASSOCIATION: July 4, 5 and 6. Annual regatta, Dubuque, Ia., Dubuque Motor Boat Club.

YACHTSMEN'S CLUB OCEAN RACE: July 8. Start near Atlantic City, N. J.; to Scotland Light Ship, Fire Island Light Ship and return. Distance, 196 miles.

HOUSTON, TEX., LAUNCH CLUB. July 10, 11 and 12. Annual regatta.

MARBLEHEAD RACE, July 14. Motor Boat Club of America. From Huntington Bay, Long Island Sound, to Marblehead, Mass. Distance, 240 miles.

NORFOLK TO BALTIMORE RACE, July 15. Maryland Motor Boat Club. Distance 187 miles.

CHESAPEAKE BAY YACHT RACING ASSOCIATION, July 16 to 26. Chesapeake Bay cruise, including motor boat races.

INTER-LAKE YACHTING ASSOCIATION REGATTA, Put-in-Bay, Lake Erie. Motor boat races, on July 18 and 20. Speed boats, cruisers and open boats.

DULUTH MOTOR BOAT RACES, July 20. Speed boats, Annual Midsummer Water Carnival, Duluth, Minn., Boat Club.

HALIFAX RACE, July 22. Start of National Yacht Club's Reciprocity Race from Brooklyn to Halifax, N. S., for the William Randolph Hearst Trophy.

MACKINAC ISLAND CRUISE, July 22. Start of Chicago Yacht Club's cruising race from Chicago to Mackinac Island.

WESTERN POWER BOAT ASSOCIATION, July 25 and 26. Third annual regatta, speed boats, conducted by the Illinois Valley Yacht Club, at Peoria, Ill.

AUGUST.

NEW YORK TO CAMDEN N. J., OCEAN RACE, August 4. Cruisers, 30 to 50 feet. Start off club house of New York Motor Boat Club, finish off club house of Camden Motor Boat Club. Distance, 225 miles.

GREAT LAKES POWER BOAT LEAGUE, August 4 and 5. Annual regatta, at Detroit.

SCRIPPS RELIABILITY CRUISE, August 7 to 14. This race will start from Detroit and will finish at Buffalo, held under the auspices of the Great Lakes Power Boat League. Distance, about 600 miles. Open to power boats not under 30 feet in length.

FRONTENAC YACHT CLUB, August 7 to 12. Motor boat race week, Frontenac, N. Y.

A. P. B. A. GOLD CHALLENGE CUP RACES, August 8, 9 and 10, for gold cup now held by Frontenac Yacht Club, Frontenac, N. Y.

ATLANTIC CITY TO CAPE MAY, N. J., August 12. Race for speed boats, Sea Isle City Yacht Club.

CHAMPIONSHIP OF THE UPPER DELAWARE, August 12. Open race. Delaware River Club, Torresdale, Pa.

FIRE ISLAND LIGHT SHIP RACE, National Yacht Club, August 12, Brooklyn N. Y. Cruisers 30 to 70 feet, A. P. B. A. handicaps. Gravesend Bay to Fire Island Light Ship and return. Distance, 84 miles.

ELIMINATION TRIALS, August 16, 17 and 19, to determine defenders of the Harmsworth Trophy. Motor Boat Club of America. Huntington Bay, L. I.

MANHASSET BAY YACHT CLUB, August 19. Open races for boats 35 feet and under. Port Washington, L. I.

BRITISH INTERNATIONAL RACES, August 24, 25, 26. For the Harmsworth Trophy defended last year by Dixie III. Huntington Bay, L. I. Motor Boat Club of America.

SEPTEMBER.

HUDSON RIVER YACHT RACING ASSOCIATION, September 4. Annual regatta, at Yonkers, N. Y.

NATIONAL ASSOCIATION OF ENGINE & BOAT MANUFACTURERS, September 4 to 9. Annual national motor boat carnival, held by the National Association in conjunction with the Motor Boat Club of America. Race for the High Speed Long Distance Trophy. Huntington Bay, L. I.

ASTORIA, ORE., MOTOR BOAT RACE MEET, September 4 to 9. Astoria Centennial, on September 7, 8 and 9, free-for-all Yacific Coast Championship series.

GREAT LAKES CHAMPIONSHIP FOR THE E. R. THOMAS TROPHY, September 16. Motor Boat Club of Buffalo, course on the Niagara River.

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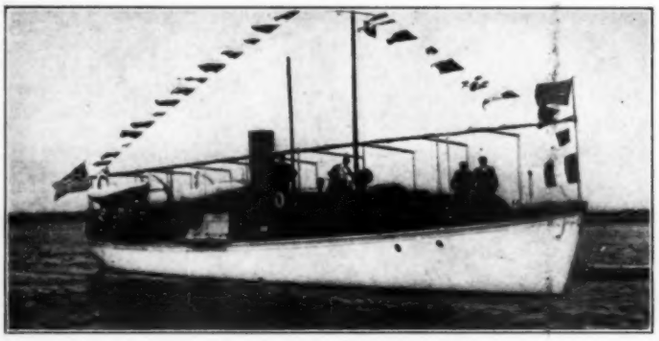

No. 481.—For sale or charter—90 ft. fast, twin-screw power yacht; speed 14-16 miles. Now in commission.
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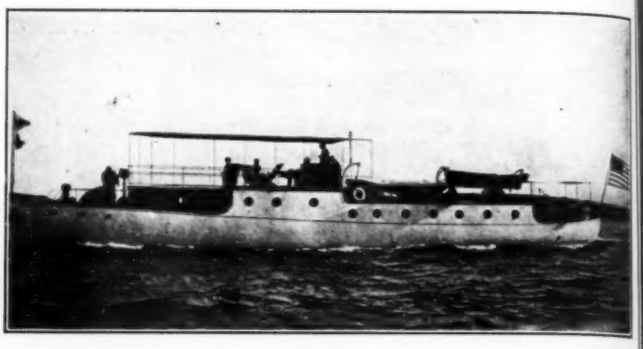

No. 175.—For sale or charter—Comfortable 86 ft. power yacht. Large accommodation. Speed 12-14 miles. Owner building larger from our designs.
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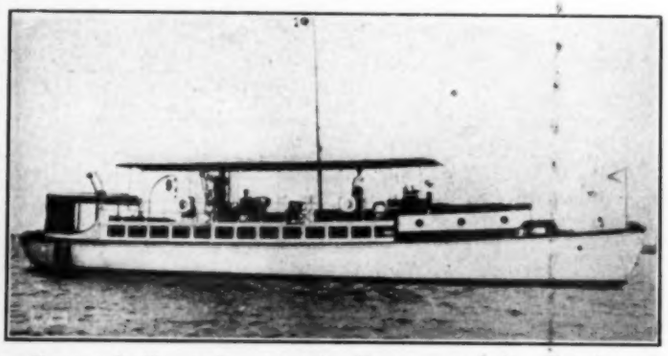

No. 474.—Sacrifice—70 ft. motor yacht. Very roomy and able. First class condition.
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No. 579.—For sale—Splendid 60 ft. power yacht; probably best of size available. Very handsome and complete.
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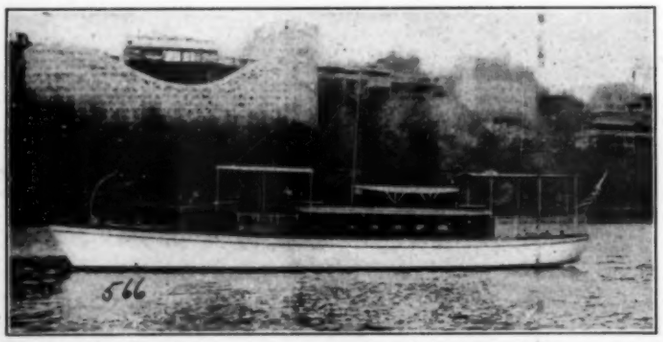
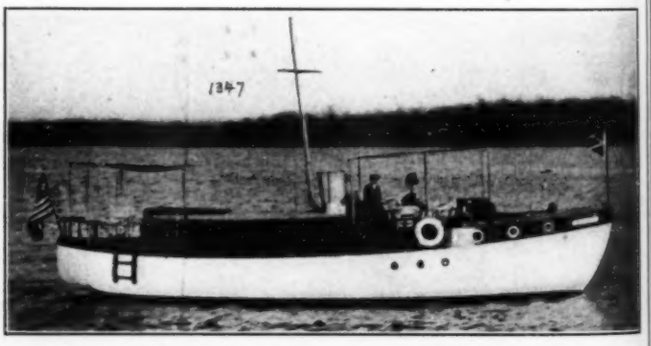
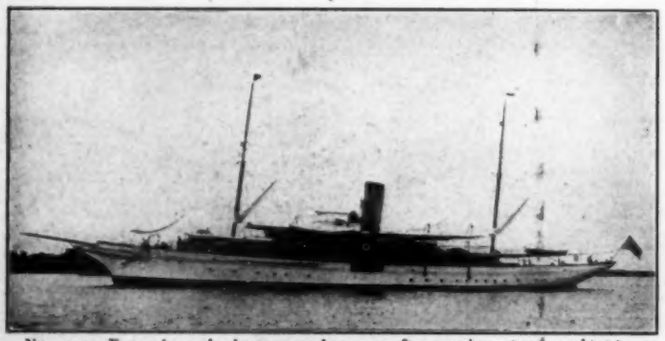


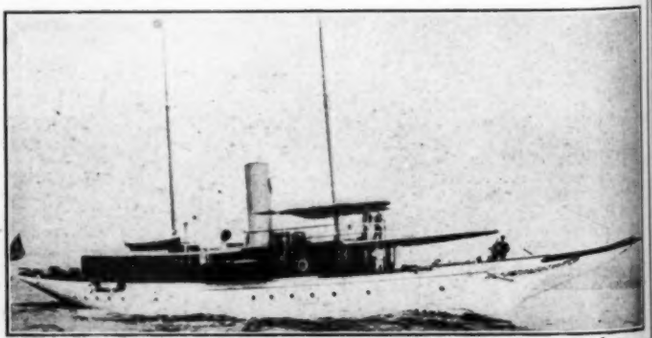
No. 566.—Offer wanted—55 x 10 ft. gasoline cruiser. Built 1908. Speed 11-12 miles; 50 H. P. 20th Century.
Please mention MOTOR BOATING.



No. 1347.—Bridge deck cruiser; 42 x 9.10 x 3 ft. Speed 11 miles. Stateroom, saloon, etc.
Please mention MOTOR BOATING.



No. 341.—For sale and charter; modern 200 ft. seagoing steam yacht; terms reasonable.
Please mention MOTOR BOATING.



No. 376.—For sale and charter; very roomy steam yacht; 130 ft.; unusual accommodation; price low.
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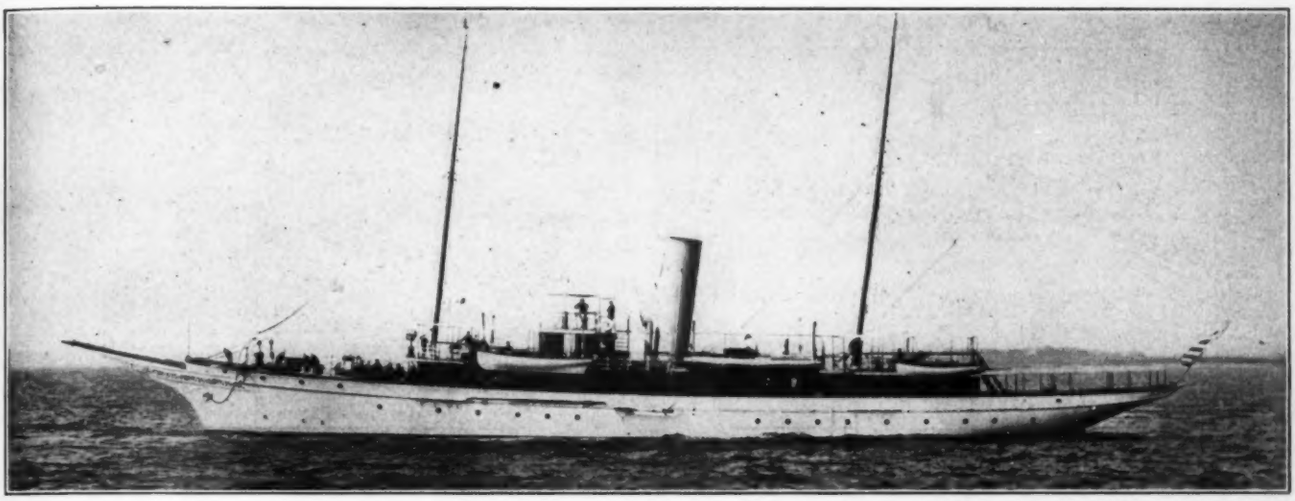

No. 5415.—For sale or charter; delivery in commission June 5; 200 ft. steel seagoing cruiser; 10 staterooms; 4 baths; electric plant; steam heat; speed 11-14 knots; cruised foreign and West Indian waters extensively. Low price. Stanley M. Seaman.
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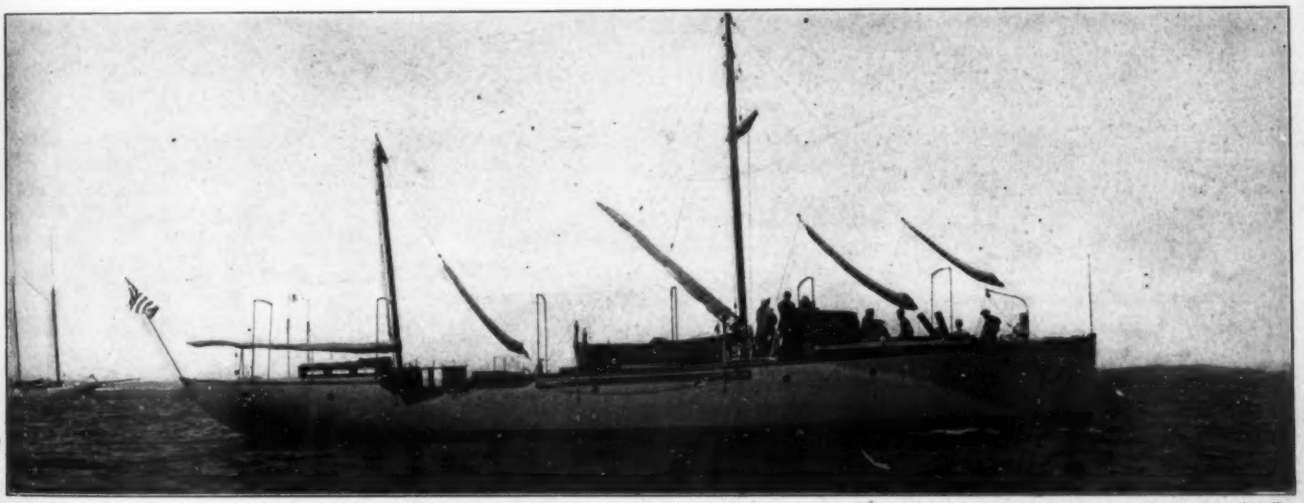
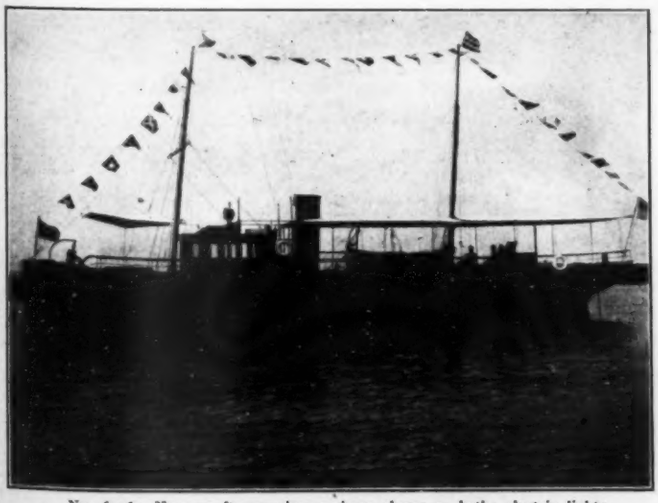


No. 6544.—Seagoing cruiser, twin screw; 75 o. a., 13.3 beam; launched 1909; only used 1910; 3 staterooms (11 berths); bath; speed 12 miles; electric lights; exceptionally able. Apply Stanley M. Seaman.
Please mention MOTOR BOATING.



No. 6356.—New 73 ft. seagoing cruiser; sleeps 7; bath; electric lights. Apply Stanley M. Seaman.
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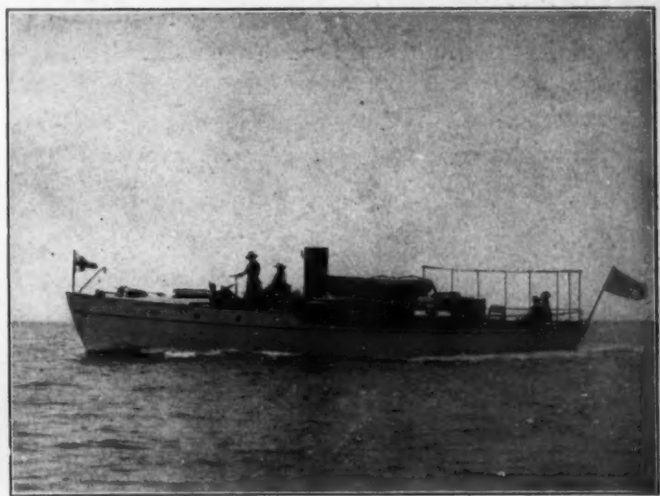

No. 6563.—New 55 ft. cruiser; large stateroom and saloon. Exceedingly low figure. Apply Stanley M. Seaman.
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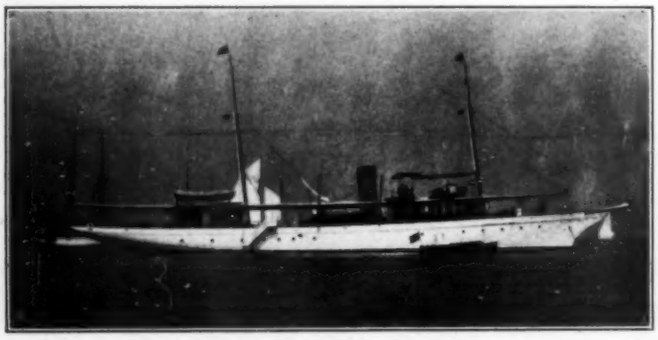

No. 540.—For sale and charter—modern, 130 ft. steam yacht; two deck houses and excellent owner's accommodation; best possible condition.
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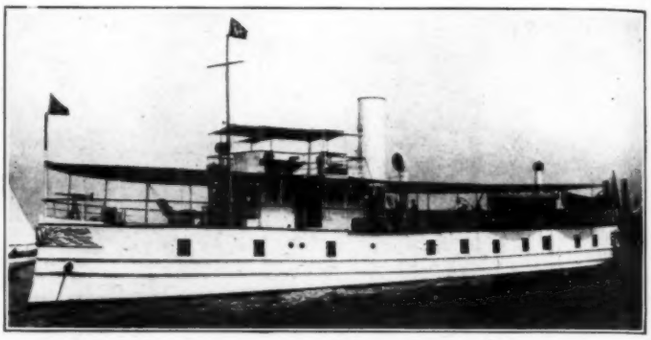

No. 422.—Very able and handsomely furnished houseboat; twin screw; 116 x 21 x 4; recent build; sale or charter.
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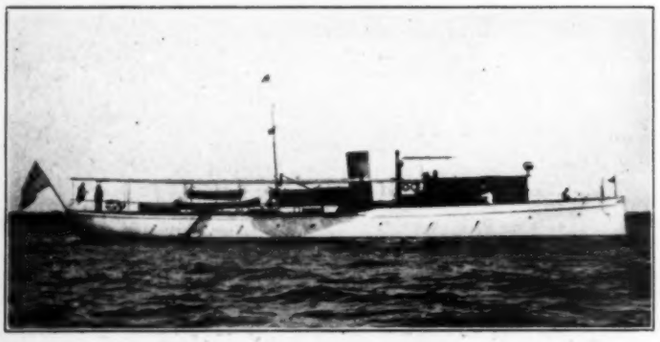

No. 1388.—Flush deck, 110 ft. gasoline yacht; stanchly built, handsomely furnished.
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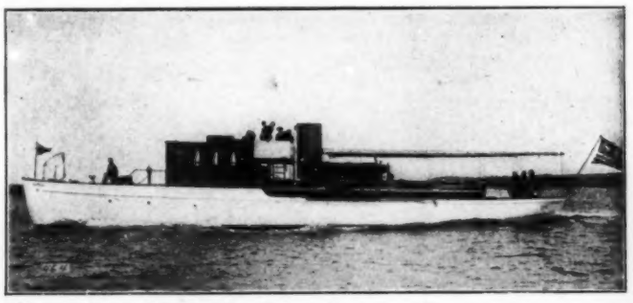

No. 1264.—Lawley-built 80 ft. cruiser, practically new; 100 H. P. Standard; speed 12 knots. Low figure.
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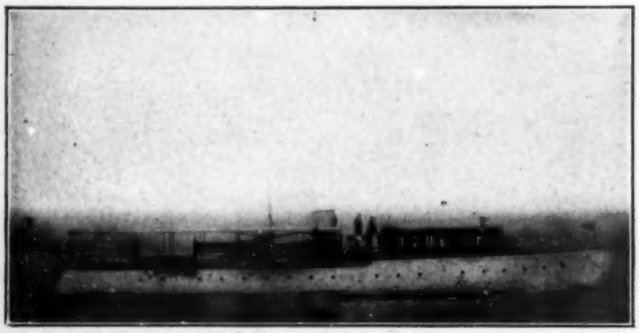

No. 1523.—Twin screw, fast 98 ft. gasoline yacht; new 1910; price attractive.
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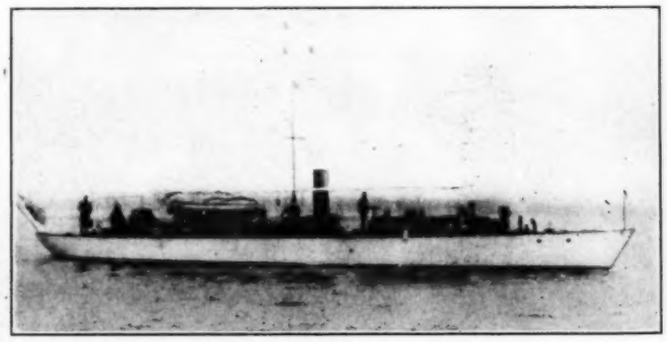
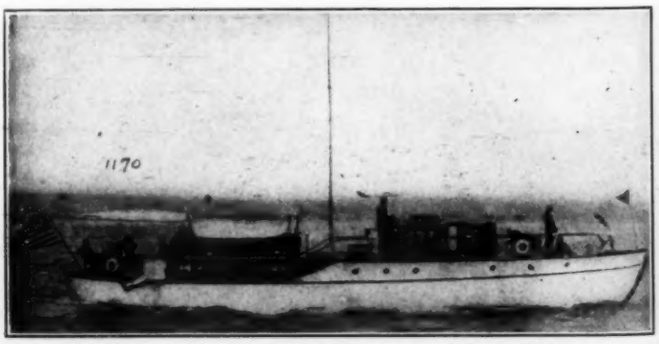


No. 948.—Fast, twin screw, 90 ft. cruiser; Craig engines; recently built from my design.
Please mention MOTOR BOATING.

No. 746.—Handsome 60 ft. Lawley-built cruiser, A1 condition; now has stack.
Please mention MOTOR BOATING.



No. 1449.—For sale or charter—twin screw 60-tooter; very roomy.
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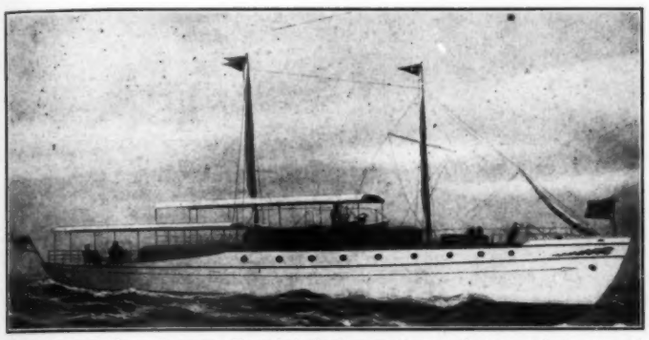
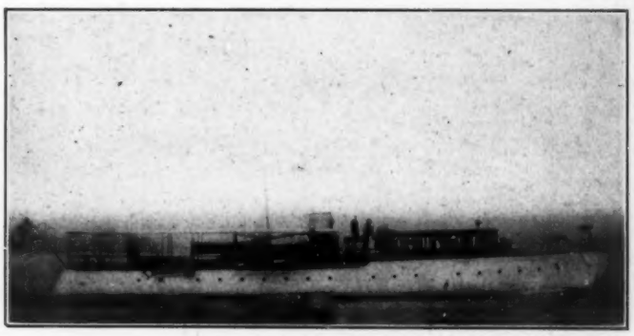
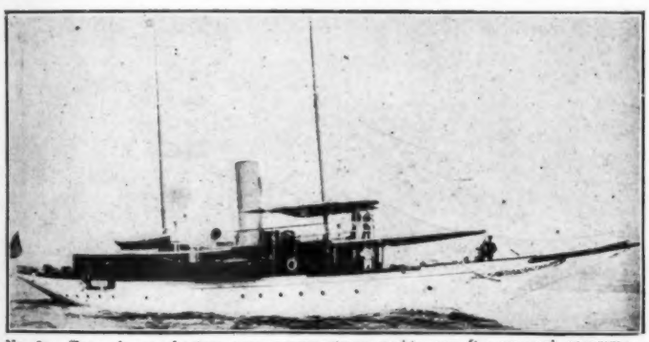


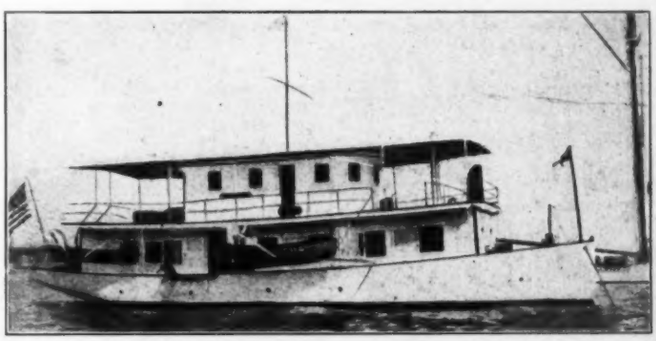
No. 7674.—75 ft., twin screw; Twentieth Century motors; good accommodations; speed 12 miles.
Please mention MOTOR BOATING.



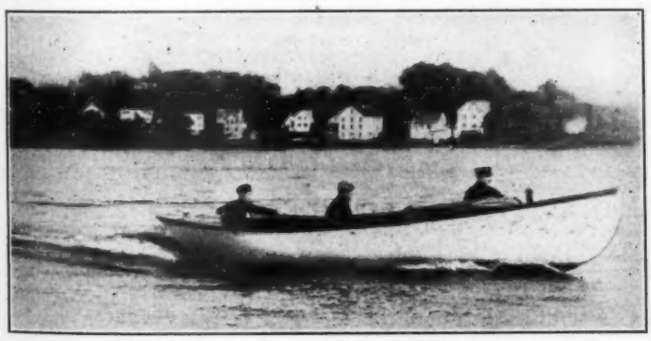
No. 7996.—98 ft.; fast; twin screw; gasoline; new 1910; price attractive.
Please mention MOTOR BOATING.



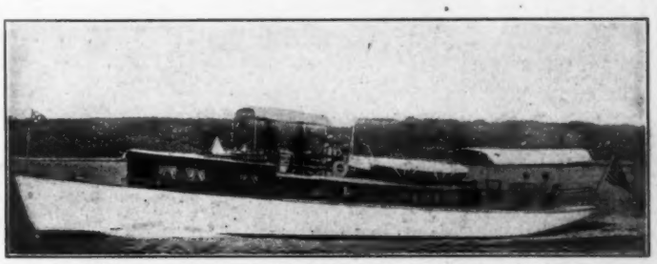
No. 85.—For sale or charter; very roomy steam yacht; 130 ft.; unusual accommodation; price low.
Please mention MOTOR BOATING.



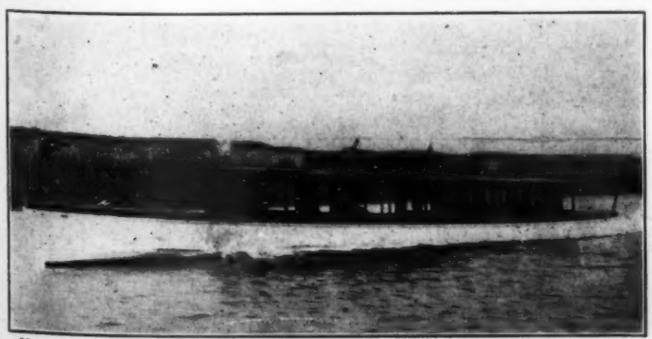
No. 1856.—68 ft.; sale, charter; large accommodations.
Please mention MOTOR BOATING.



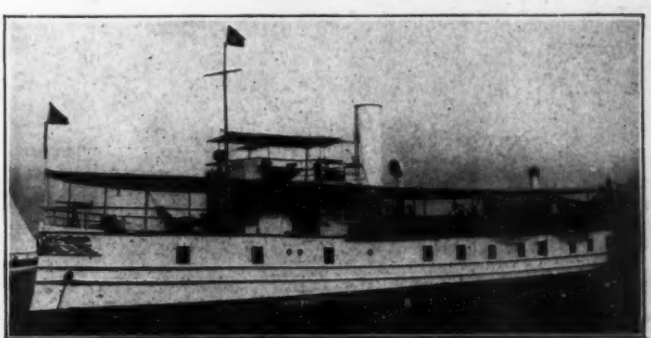
No. 8079.—For sale—Atlantic dory, 5 H. P.; excellent condition; practically new. Bargain.
Please mention MOTOR BOATING.



No. 7334.—For sale or charter, twin screw cruiser; 12 miles.
Please mention MOTOR BOATING.



No. 7409.—For sale—Express launch, 70 ft. x 8 ft. 3 in.; two 100 H. P. motors; excellent condition. Can be purchased reasonably.
Please mention MOTOR BOATING.



No. 243.—Very able and handsomely furnished houseboat; twin screw; 116 x 21 x 4; recent build; sale or charter.
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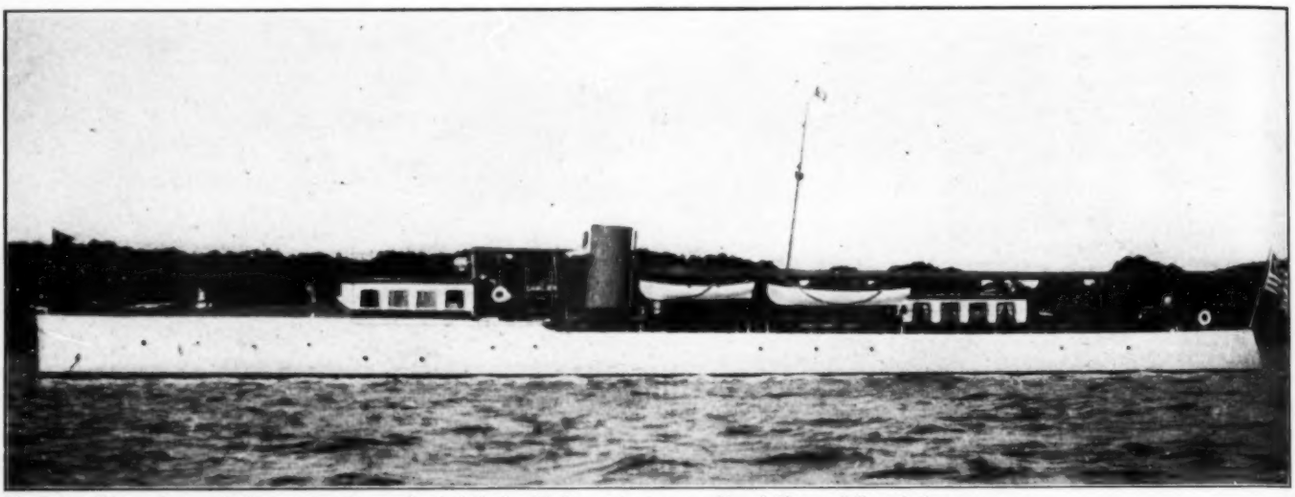
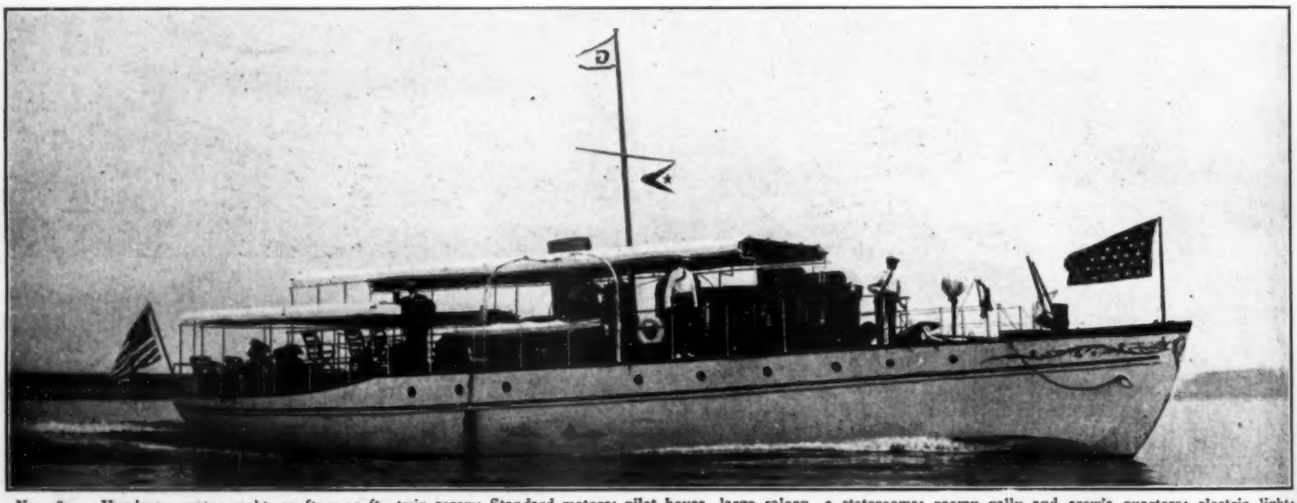


No. 3266.—Sale or charter—Modern steel yacht, 135 ft.; lavishly furnished; 5 staterooms, 2 cabins; half cost; full particulars on request.
Please mention MOTOR BOATING.



No. 2804.—Handsome motor yacht, 75 ft. x 15 ft., twin screw; Standard motors; pilot house, large saloon, 2 staterooms; roomy gally and crew's quarters; electric light; 2 boats, fully equipped.
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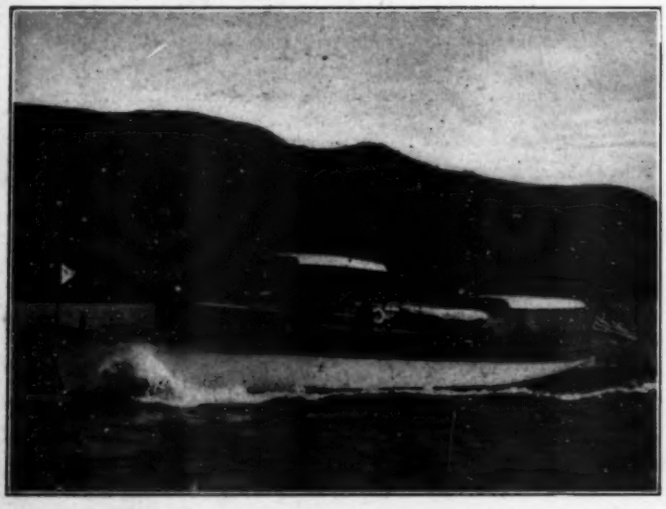
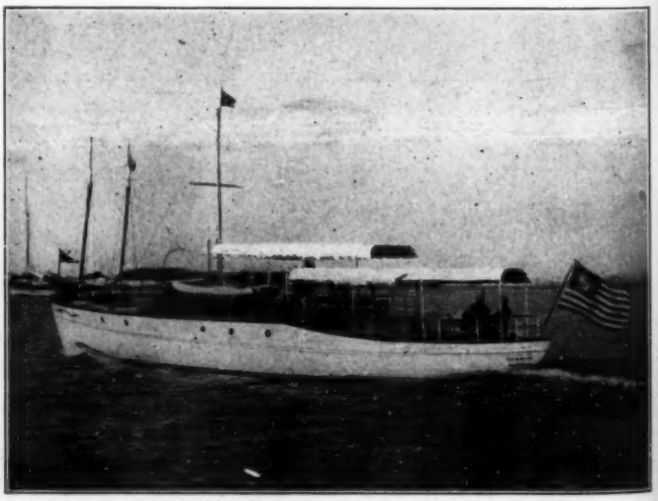


No. 2546.—Sale or charter—Modern 65 ft. cruiser; sleep 6; electric light.
Please mention MOTOR BOATING.



No. 2614.—Modern raised deck cruiser, 65 x 12 x 3 ft. 6 in.; 40 H. P.; 2 staterooms, large cabin and crew's quarters; splendid deck room; electric light. Furnishings and machinery new 1910.
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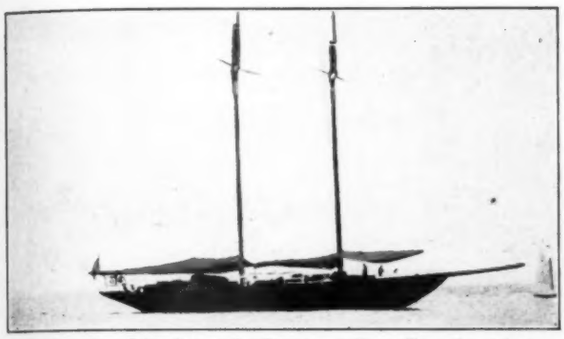
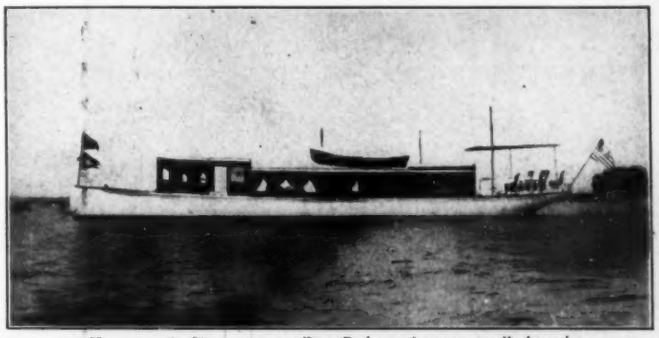
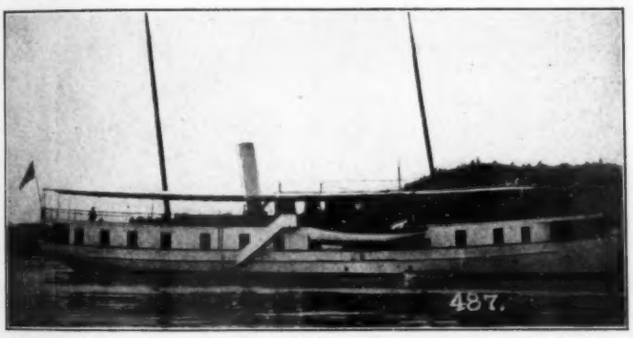


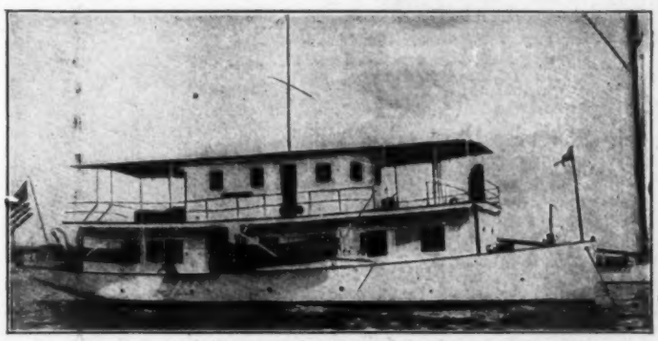
No. 2980.—Sale, charter; handsomest 100 ft. auxiliary; low prices.
Please mention MOTOR BOATING.



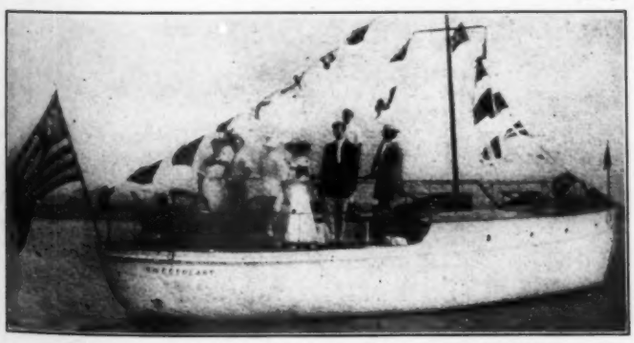
No. 322.—61 ft.; 12 to 14 miles; Craig engine; must sell; bargain.
Please mention MOTOR BOATING.



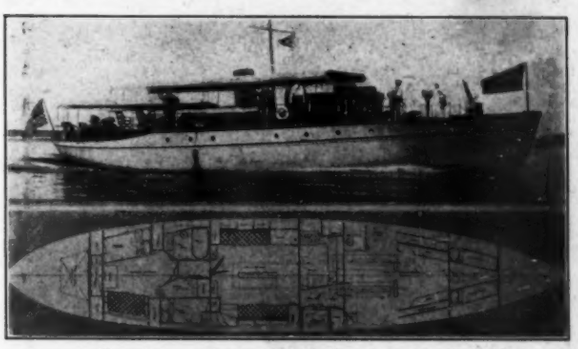
No. 487.—Sale, charter; 125 ft. twin screw; seven staterooms.
Please mention MOTOR BOATING.



Please mention MOTOR BOATING.
No. 2412.—68 ft.; sale, charter; large accommodations.



No. 2818.—50 ft.; Lawley build; sale, charter; attractive prices.
Please mention MOTOR BOATING.



No. 2820.—75 ft.; two Standard engines; very desirable.
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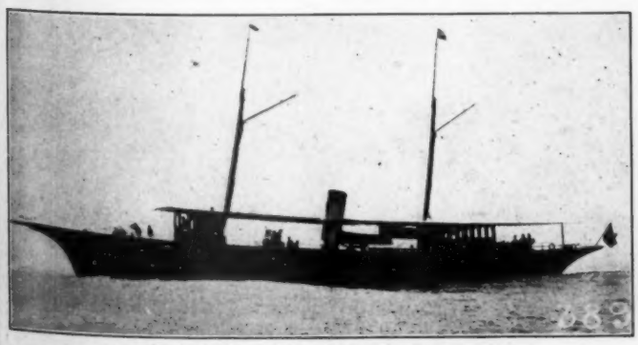
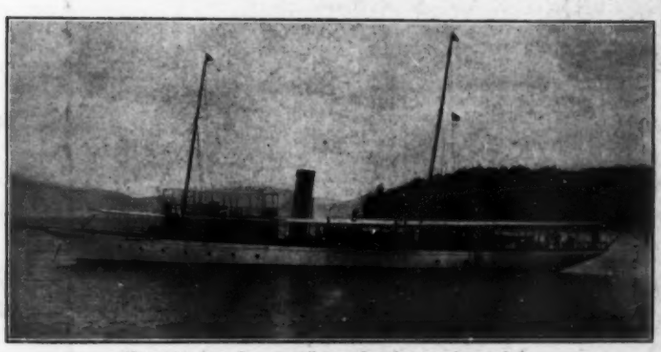


No. 389.—138 ft.; absolute sacrifice.
Please mention MOTOR BOATING.



No. 108.—150 ft.; 17 miles; sale, charter; low prices.
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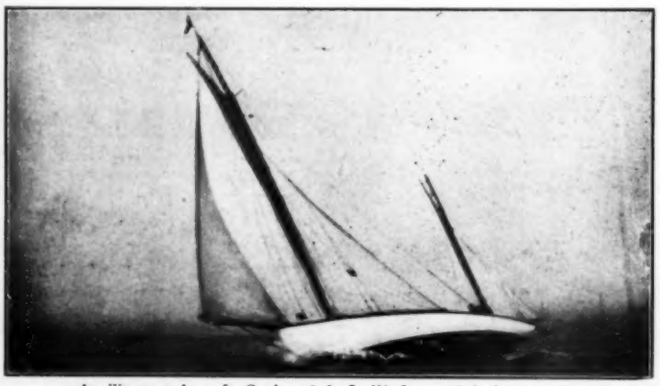

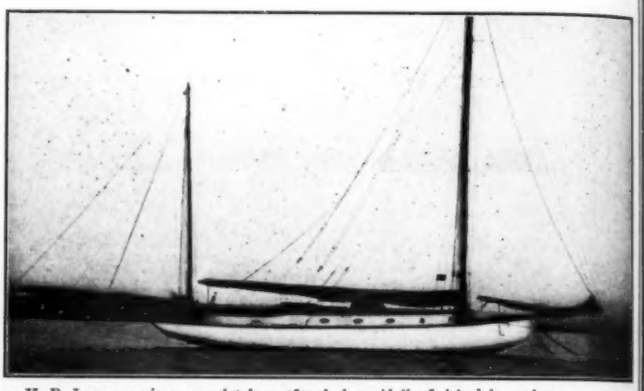

Auxiliary yawl, 41 ft. O. A.; 28 ft. L. W. L.; 12½ ft. beam; 4 ft. 7 in. draft; 10 H. P. Jaeger engine; completely outfitted; beautifully finished in mahogany. For sale at a bargain.

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Fast cabin cruiser, 33 ft. by 7 ft. 6 in. by 2 ft. 6 in., with 12 H. P. Standard engine, two years old. Bargain at $1,000.

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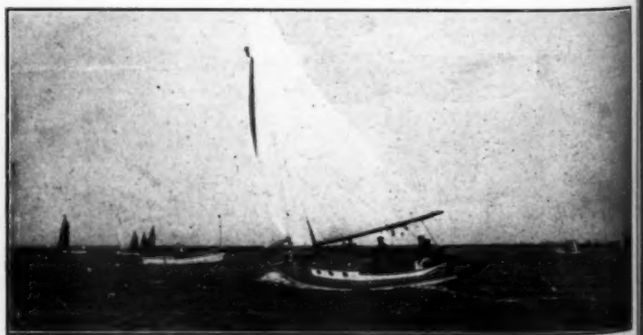

"Quakeress," 40 ft. O. A.; 33 ft. L. W. L.; 11 ft. beam; 3 ft. draft. The straight keel and shoal draft make her ideal for shallow waters.

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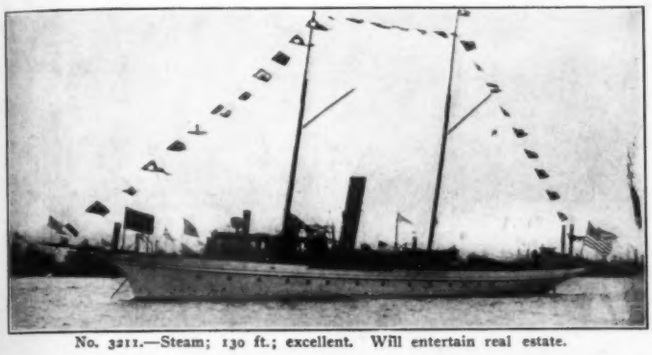
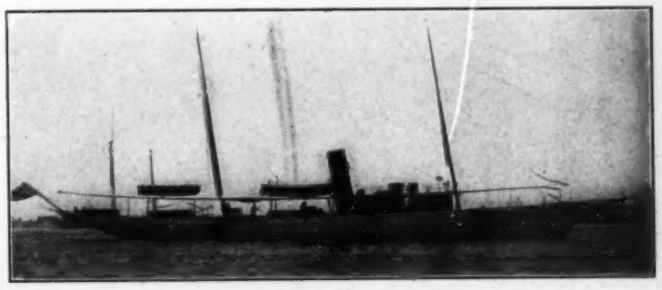
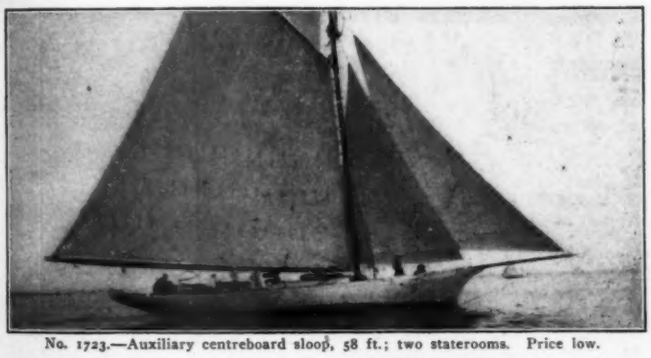


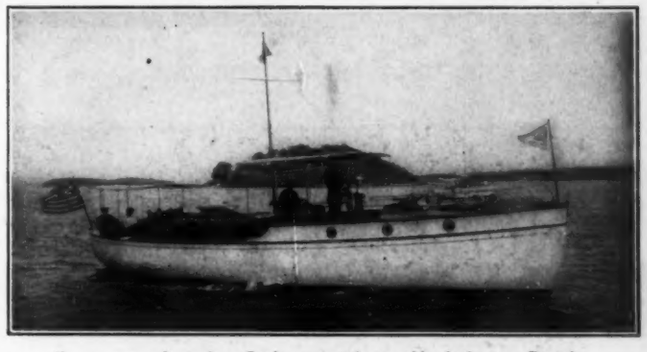
No. 3211.—Steam; 130 ft.; excellent. Will entertain real estate.



No. 3068.—Steam; 145 ft.; steel; good accommodations; speed 18 miles.
Please mention MOTOR BOATING.



No. 1723.—Auxiliary centreboard sloop, 58 ft.; two staterooms. Price low.



No. 1032.—55 ft. cruiser; Lozier motor; large cabin, bath, etc. Bargain.
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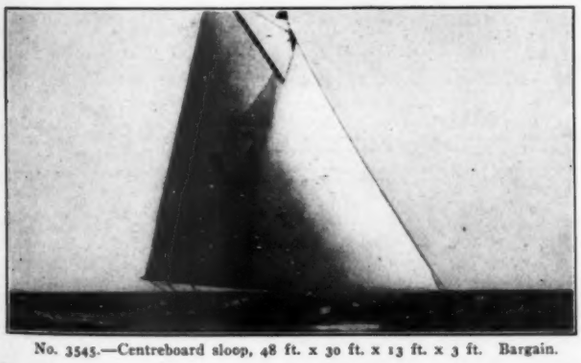
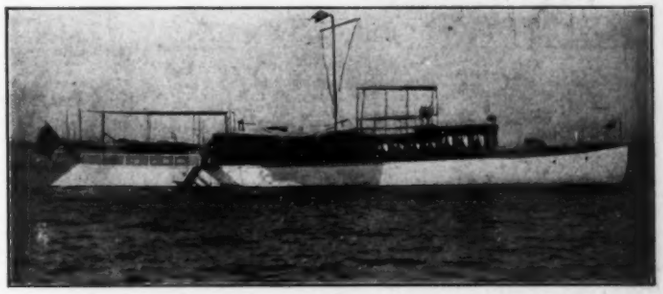


No. 3545.—Centreboard sloop, 48 ft. x 30 ft. x 13 ft. x 3 ft. Bargain.



No. 1134.—74 ft. cruiser; 100 H. P. Speedway motor; good accommodations; speed 15 miles.
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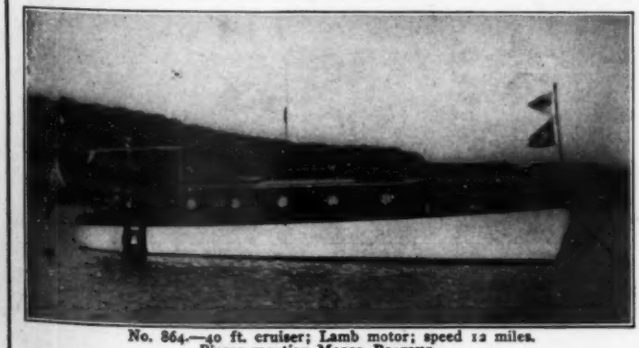

No. 864.—40 ft. cruiser; Lamb motor; speed 12 miles.
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No. 853.—65 ft. cruiser, twin screw; Standard motors; good accommodations; speed 12 miles.
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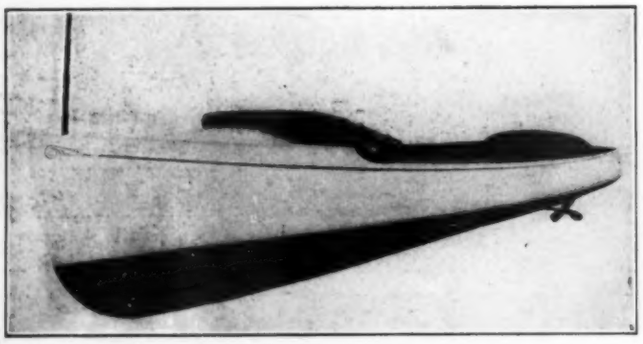

No. 51.—25 x 5 runabout; mahogany decks and interior; 4-cylinder Stamford motor; roomy; comfortable; prime condition; will be sacrificed for $600; worth $1,000.
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No. 65.—Pelican, 28 x 4 ft. 2 in.; model and lines identically same as famous Peter Pan II; auto speed runabout; beautiful mahogany decks and interior; mahogany lazy-backs; 4-cylinder Mercury; speed 21 miles. Great bargain, $1,300.
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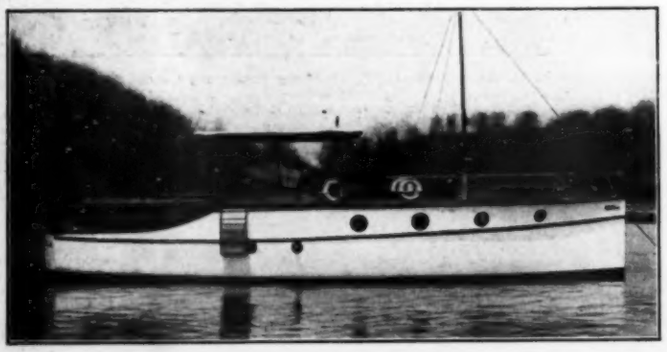

No. 67.—Brand new deep seagoing cruiser, 40 x 9 ft. x 3 ft. 6 in. draft; six cylinders, 5½ x 6; 1911 Scripps motor. Every comfort and convenience. Construction highest grade; appointments and furnishings splendid; up-to-date safety devices; boat can be controlled by one man; sleeps six; owner must sell account health.
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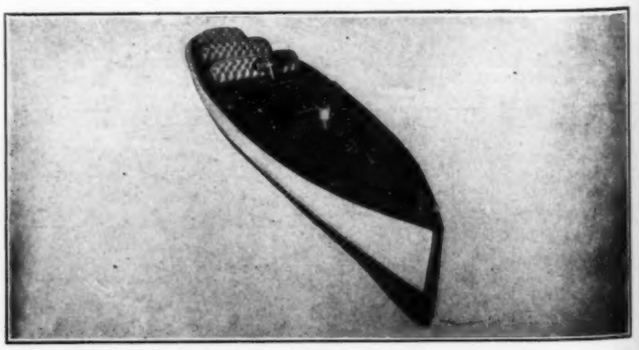

No. 43.—Magnificent 16 ft. yacht tender or runabout; 2-cyl., 10 H. P. Roberts motor; rear starting device; mahogany decks; motor hatches; coaming and interior; upholstered lazy-backs; beautifully finished and furnished; electric lights; auto controls; used one month; really new. Sell half cost.
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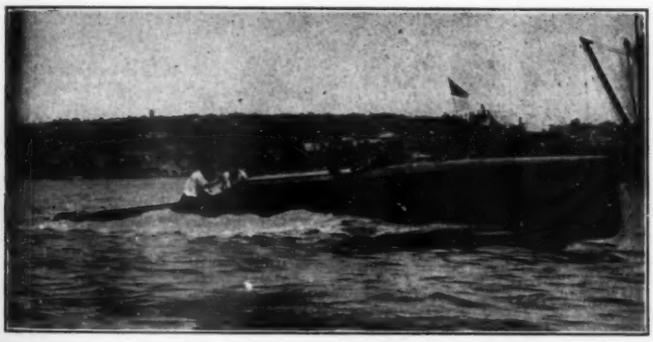
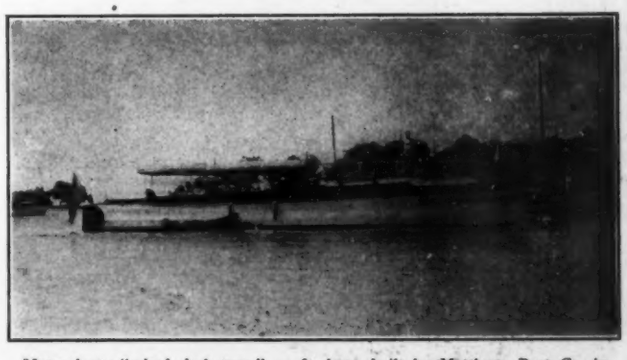
Raised deck cruiser, 44 ft. over all, 38 ft. water line, 9 ft. 6 in. beam, 3 ft. draught. Designed and built by us in 1910. Steersman's platform on starboard side, with controls to motor on steering wheel; reverse lever located at this point. Cockpit left open for chairs; thwart seat at after end of cockpit. Awning and side curtains for cockpit. Boat is lighted with acetylene gas, Commercial Co. system. Machinery: Machinery consists of a 4-cylinder, 4-cycle, 6 x 6 in. Speedway gasoline marine engine, 32-40 h. p. Copper fuel tank, 200 gals. capacity. Speed of the boat is between 10 and 11 miles per hour. Is an elegant sea boat, having been used all summer in vicinity of Block Island. This is without question the best raised deck cruiser of the size that is available, and is only offered, as owner is contemplating having a larger "Speedway" boat built. Must be seen to be appreciated. Fully equipped.

Please mention MOTOR BOATING.



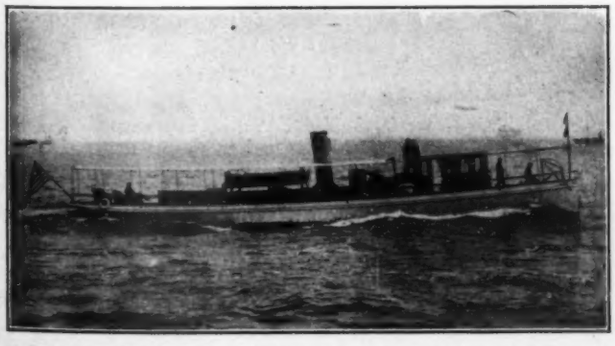
Open motor boat, speed type, 39 ft. 4 in. over all, 5 ft. 4 in. beam. Designed and built by us 1909. Speed, 29 to 30 miles per hour. Hull planked and finished in mahogany. Varnished inside and outside. Equipped with 6-cylinder, 6¾ x 8 in. Speedway gasoline engine with Bosch double ignition—both high and low tension systems. Arranged for one man control. Can seat comfortably six persons, and is the best launch of its kind ever turned out. Has had very little service and will be delivered in fine order at Morris Heights.

Please mention MOTOR BOATING.



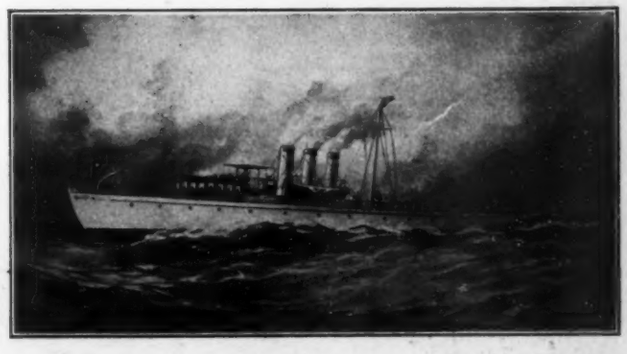
Motor boat, "raised deck type," 55 ft. long, built by Matthews Boat Co. in 1910; has toilet, galley, cabin and motor room; extra large cockpit; equipped with 6-cylinder, 6¾ in. x 8 in. "Speedway" gasoline engine, (Special) 125 H. P.; arranged for one-man control; electric lights; fully found; speed 17 to 18 miles per hour; a very attractive boat; specially adapted for day service.

Please mention MOTOR BOATING.



Twin-screw, light-draft steam yacht, 83 ft. over all; has large saloon, double stateroom, deck dining room, bridge, etc.; two triple-expansion engines and "Seabury" water tube boilers; electric lights, etc.; boat and machinery in good order, subject to closest inspection.

Please mention MOTOR BOATING.



High-speed twin-screw steam yacht, 137 ft. over all. Designed and built by us in 1909. Equipped with two "Seabury" triple-expansion engines and "Seabury" water tube boilers; fully found; fine order throughout; speed guaranteed 30 miles per hour; fastest steam yacht now available.

Please mention MOTOR BOATING.

All of the above boats can be seen at our works. Further particulars, plans, etc., will be forwarded to those interested. Inspection of these boats is invited. We have a number of other second-hand craft of various styles and sizes for sale.

A. J. McINTOSH YACHT AGENCY

Telephones—
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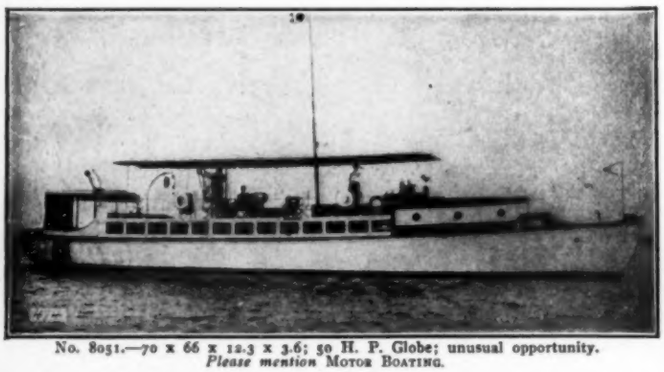
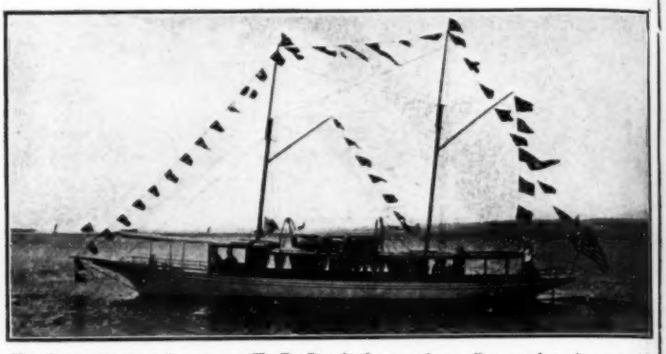
Highest Grade Yachts of All Types For Sale or Charter —
Motor Boats — Steam — Sailing Craft

Correspondence Invited - - - - - - - - - - - - Descriptions Furnished



No. 8051.—70 x 66 x 12.3 x 3.6; 50 H. P. Globe; unusual opportunity.
Please mention MOTOR BOATING.

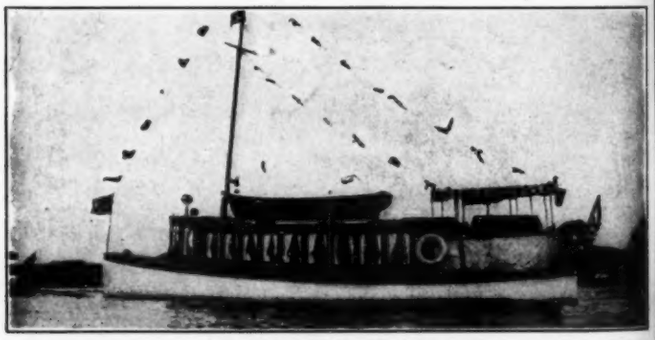


No. 8054.—67 x 10.6 x 3; 40 H. P. Standard; now has rail around entire top of house; good passenger boat; accommodates 40 outside; 30 inside.
Please mention MOTOR BOATING.

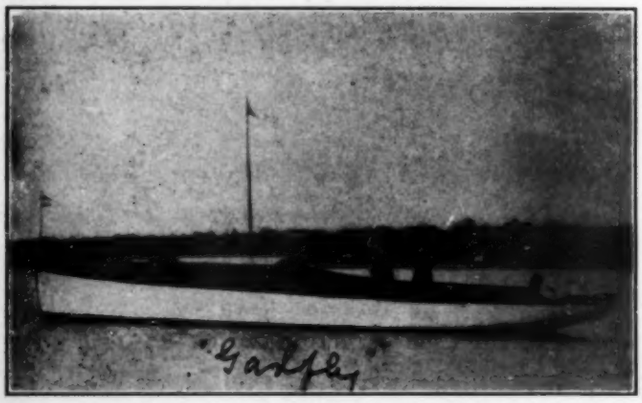
No. 681.—40 ft. x 9 ft. 6 in. x 3 ft.; built 1910; 30 H. P.; 20th Century motor. Probably best boat of this type built.
Please mention MOTOR BOATING.

No. 741.—36 x 7.6 x 2.8; 1909; 45 H. P. motor; speed 12 miles; good as new.
Please mention MOTOR BOATING.

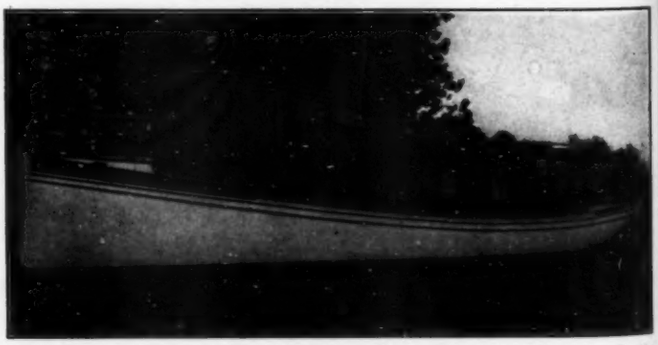
No. 688.—45 ft. x 10.6; 30-40 H. P. motor; price very low.
Please mention MOTOR BOATING.



No. 376.—45 x 10 x 3; 25 H. P. Standard; recently overhauled. Price reasonable.
Please mention MOTOR BOATING.



Gadfly.—44 x 8.6 x 2.10; 18 H. P. Standard; thoroughly overhauled this year; delivered in commission; excellent bargain.
Please mention MOTOR BOATING.



No. 3809.—48 ft. steam launch; heavily constructed; excellent condition; exceedingly low price.
Please mention MOTOR BOATING.

THE ATLANTIC COMPANY

AMESBURY, MASS.

"Gurnet" Dory and Odd Boat Specials

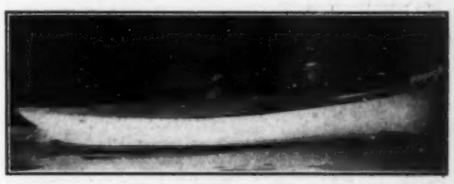
No. 3027.—30½ ft. "Gurnet" dory; 10 H. P. Atlantic Special motor; Paragon reverse gear; Perfex waterproof ignition; tan chase cushions, cork filled; boat has two copper gasoline tanks holding about 55 gallons; seamless copper tube to carburetor, which is of the Schebler type. It is in absolutely perfect condition; used for demonstrating three weeks only.

No. 2584.—25 ft. lap seam "Gurnet" dory, racing model; new 8 H. P. Atlantic motor; Schebler carburetor; Perfex waterproof ignition; copper gasoline tank; seamless copper tube to carburetor; boat refinished and in absolutely first-class condition; new cushions, khaki covered, and single spray hood.

No. 4578.—18½ ft. "Gurnet" dory; 3 H. P. Atlantic motor; copper gasoline tank; seamless copper tubing to carburetor; waterproof Orswell ignition; Schebler carburetor; hull painted vermillion; decks varnished; spray hood and apron; boxes and plates for side lights; anchor and 100 ft. of line. Boat located at Plattsburgh, N. Y.

No. 2543.—25½ ft. "Gurnet" dory; 8 H. P. Atlantic motor; Schebler carburetor; Perfex waterproof ignition; copper gasoline tank; cork filled cushions. Boat in perfect condition; located at College Point, N. Y.; may be seen by appointment with The Atlantic Co.'s representative, New York.

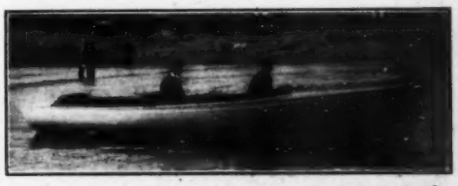
No. 2073.—20 ft. "Gurnet" Dory; lap seam; new hull; new 4 H. P. Atlantic motor; Schebler carburetor, Perfex waterproof ignition; copper gasoline tank; seamless copper tube to carburetor; cork filled, khaki-covered cushions; boat in absolutely first-class condition.



No. 2354.—23½ ft. "Gurnet" dory; 5 H. P. Atlantic Special motor; spray hood and apron; cork filled, leather substitute covered cushions; boat has copper gasoline tank; seamless copper tube to carburetor; Schebler carburetor; Perfex waterproof ignition. Can be seen in New York City.

No. 2536.—25½ ft. semi-speed clipper launch; 10 H. P. Atlantic Special motor; Perfex waterproof ignition; Paragon reverse gear; Schebler carburetor; boat has copper gasoline tanks; is handsomely finished with decks, wash rail and interior joiner work of mahogany. May be seen by appointment with The Atlantic Co.'s representative, New York.

No. 2567.—25½ ft. "Gurnet" dory; 10 H. P. Atlantic Special motor; Paragon reverse gear; engine new 1910, used two months only. Owner has bought a larger Atlantic boat. Boat is in good condition; located at Freeport, L. I.; may be seen by appointment with The Atlantic Co.'s representative in New York.



No. 2364.—23 ft. x 5 ft. semi-speed runabout; handsomely finished in black enamel with mahogany decks, wash rail and interior joiner work; 12 H. P. Atlantic motor; speed 13 miles; accommodations for 8 people; cockpit can be comfortably seated with chairs. Boat has copper tank, seamless copper tube to carburetor; Perfex waterproof ignition. May be seen in New York City.

No. 2056.—32 ft. x 4 ft. 6 in. speed boat; 40 H. P., 4-cylinder Atlantic motor; Bosch magneto with double ignition system; Paragon reverse gear; actual speed on trial, 24 miles. Boat has been used for demonstration only and has been refinished and is in all particulars equal to new.

No. 1787.—17 ft. x 4 ft. 6 in. yacht tender; 6 H. P. Atlantic motor installed under hatch, with bulkhead control and rear starter; copper gasoline tank; Schebler carburetor; Perfex waterproof ignition; boat in all particulars equal to new.

No. 2183.—21 ft. x 4 ft. 6 in. speed boat "X. T. C."; 12 H. P. Atlantic motor with auxiliary air; speed record better than 17 miles; boat holds 1909 Merrimac River championship; used for demonstration only and is in perfect physical condition; boat and motor thoroughly overhauled; salt water equipment throughout.

No. 2559.—25 ft. x 4 ft. speed hull, canvas covered; 12 H. P. Atlantic motor, thoroughly rebuilt; hull is practically new with mahogany decks and wash rail; copper gasoline tank; salt water equipment; Perfex waterproof ignition.

THE MOTOR BOATING MARKET PLACE

The rate for "For Sale" and "Want" advertisements is 3 cents per word. If an illustration is used the charge is as follows, which includes the making of the cut:
Cut one inch deep, one column wide..... $2
Cut two inches deep, two columns wide..... $3
Cut three inches deep, three columns wide..... $10

Opportunities for the Motor Boatman

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention Motor Boating.

WE HAVE the following slightly shopworn and slightly used engines with Schebler Carburetor and complete salt water equipment:
4½ H. P. 1909 Eagle, brand new and a splendid value; $70.00.
4 H. P. Mianus, slightly used, but in splendid condition; $50.00.
7 H. P. Union, slightly used, but in good condition; $72.00.
These are all Make and Break, and are strong, serviceable engines. Eagle Company, 98 Warren Street, Newark, N. J.

FOR SALE—Motor boat built by Kirk, Toms River, N. J.; 22 ft. 6 in. over all; 5 ft. 10 in. beam; draft 20 in.; 3 H. P. Globe engine (1907 model); hair cushions; spray hoods covering entire board; copper tank; brass trim; galvanized detached top; all in first class order; price $400; cost $850. Address J. W. H., Barnegat City, N. J.

LEARN at home, in a few evenings, how to construct, operate and repair Motor Boats, Motorcycles, Automobiles, Flying Machines, Gasoline Engines, Electric Motors, Commercial Trucks. Big demand, with good pay for competent men. Thousands of positions open. Let us help you in place and pay. A postal card will do. Address Extension Department, The Charles C. Thompson Co., 549 Wabash Ave., Chicago, Ill.

WANTED—Second-hand engine, medium or heavy duty, either Buffalo, Lamb, Scripps or Sterling; about 25 H. P.; must be a bargain. Address H. J., care MOTOR BOATING.

FOR SALE—3 H. P. 18 ft. steel launch; Ferro engine; perfect condition; equipment complete; used one season. France, 316 State St., Brooklyn.

FOR SALE—Gasoline launch, 29x7; Ferro engine, 11 H. P.; boat in splendid condition; cabin nicely fitted; will be sold cheap. Apply Morse Dry Dock Co., Ft. 56th St., Brooklyn.

BROKEN cylinders and other automobile parts of cast iron and aluminum made good as new by autogenous welding at about one-fourth cost of new ones. Shipment made within 24 hours from arrival. Guarantee, references and indisputable evidence for the asking. Waterbury Welding Works, Waterbury, Conn.

WANTED—First-class mechanical draughtsman and mechanic with engine and boat experience, capable of fast and accurate work; must be steady; married man preferred; state wages, previous employment and wages expected. References required. Sterling Engine Co., Buffalo, N. Y.

FOR SALE—Motor boat; a 20-foot fast model built boat, equipped with a 1910 Fox double cylinder, 4x4½-bore engine; price, complete, $250.00 (with extra set K. W. coils and a magneto, $275.00). Sanford Johnson, 504 Shawnee St., Leavenworth, Kans.

FOR SALE—21 ft. special Toppan power dory, smooth planked and equipped with 5 H. P. T. & M. engine; boat and complete equipment in perfect condition; used one month; copper air tank under after deck, making craft unsinkable; a staunch, able sea boat; owner moving west. Price—$210, delivered Boothbay Harbor, Me.; $225 delivered E. S. S. Co.'s wharf, Boston. Inquire H. L. Wass, Sewickley, Pa.

FOR SALE—Launch fully equipped, practically new. 25 ft. 6 ft. 5 in. beam; white oak frame and keel; canopy top with curtains; 11 horse Ferro motor; price $550.00. Address P. O. Box 129, Port Washington, N. Y.

WANTED—Modern cruiser for Florida waters; delivery close of northern season. About 35 ft. x 8 ft. x 2 ft. 6 in. draft, forward bridge control, aft cockpit, drop window cabin. Speed 8 miles or better. Will personally inspect July. Moderate price. Give full particulars and photo. C. W. Fowler, Lyndon, Ky.

SPEED runabout, 25 ft. x 4 in.; fine model; 30-60 Stearns Auto engine; speed 20 miles; everything complete; price very reasonable. Geo. B. Paterson, 128 Broadway, New York City.

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THE one word that thoroughly describes the perfect "CAMERON MARINE MOTOR."
The material, design, workmanship and accessories are all of the very best than can be procured.

Light 6-30	Light 4-20
$450.00	$350.00

Write for catalogue "B."
EASTERN MOTOR SALES CO.,
1680 Broadway, New York City.

CANOE.—Cedar power canoe. New this spring. Mahogany trim. A little beauty, 16 ft. long, 2 cylinder, 4 cycle motor, perfectly dependable. Speed 12 miles. Air tanks make non-sinkable. Paddles, canvas cover, cushions, etc. Changed plans, cannot use. A new boat worth $300 for $175 delivered. Address Sidney Bird, care Smith-Bird Co., Dubuque, Iowa.

Special Announcements of the Trade.

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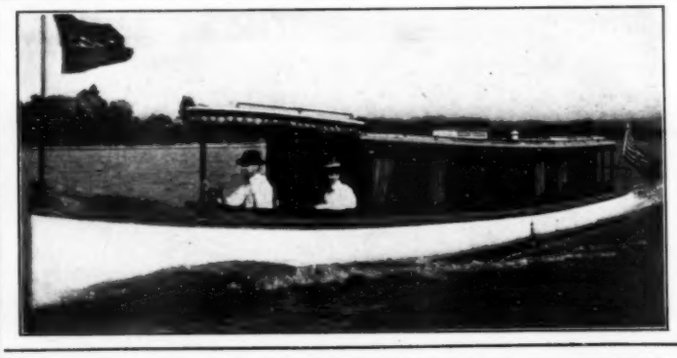
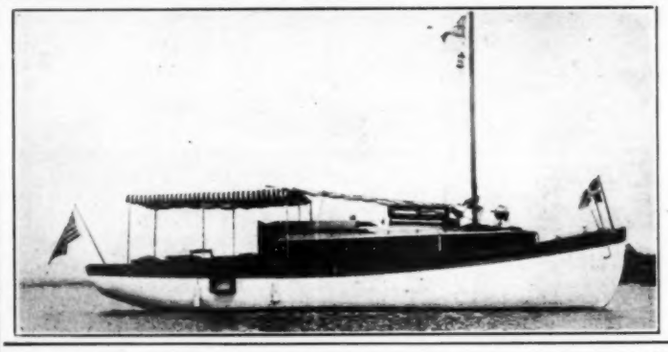
L. B. Allen Co., Inc., 3517 Lincoln Street, Chicago, Ill.
American Commercial Corp., 110 West Street, New York City.
Cell Drier Machine Co., Taunton, Mass.
Fowler Lamp & Mfg. Co., 57 East 24th Street, Chicago, Ill.
Phoenix Paint & Varnish Co., 124 Market Street, Philadelphia, Pa.
PARTS.
The Dunbar Brothers Co., Bristol Conn.
Sheriff's Manufacturing Co., Milwaukee, Wis.
COTTON, DUCK CANVAS.
Lowell Weaving Company, Lowell, Mass.
WATERPROOF CLOTH.
Fabrikoid Works, Newburgh, N. Y.
IGNITION.
Fahnestock Electric Co., 129 Patchen Ave., Brooklyn, N. Y.
BOAT BUILDERS.
Kyle & Purdy, Inc., City Island, N. Y.
MOTORS.
Acadia Gas Engine Co., Ltd., Bridgewater, Nova Scotia.
FLAG POLES.
Novelty Manufacturing Co., Waterbury, Conn.
METAL STAMPING.
The Chandler Co., Inc., Springfield, Mass.

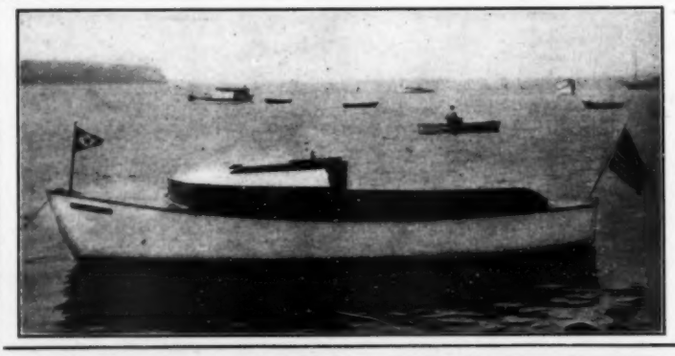


No. 1348.—Offer wanted; 50 x 8 ft. half-cabin launch (similar to illustration); speed 12 miles; 40-60 H. P. Sterling motor; Seabury hull. Cox & Stevens, 15 William Street, New York.

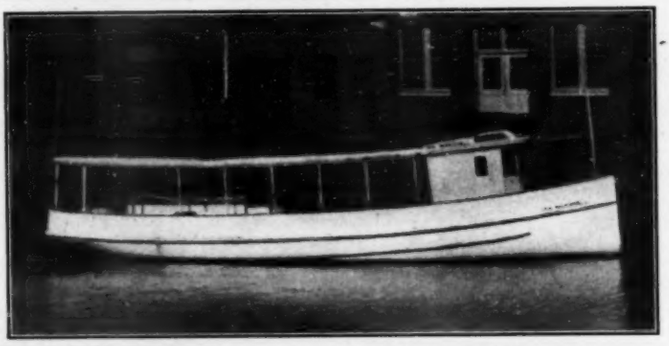


No. 1354.—Bargain—34 x 9 ft. hunting cabin cruiser; in excellent condition; very roomy; speed 8 miles; 14 H. P., 2 cyl., heavy duty motor. Full particulars from Cox & Stevens, 15 William Street, New York.

No. 5782.—30 ft. trunk launch; two years old; 15 H. P. motor. Particulars from Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.



No. 5781.—25 ft. trunk cabin launch; Fulton motor; strongly built; good sea boat. Particulars from Frank Bowne Jones, Yacht Agent, 29 Broadway, New York.



For sale—52 ft. over all; 12 ft. 10 in. beam; depth of hold 4 ft.; and is equipped with 25 H. P. Globe engine. Speed about 7¾ miles per hour. She was built at Pocomoke City, Maryland, in 1906, and I believe is in first class order throughout. Price, complete, Twenty-two Hundred ($2,200.00) Dollars. Can be seen at Seaford, Delaware, or in this city. F. F. Slocomb, 14th and Poplar Sts., Wilmington, Del.

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Successor to EDWARD BURGESS
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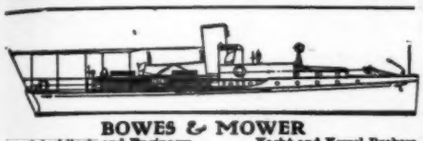
Commission on Sales, 5 per Cent. Commission on Charters, 10 per Cent.



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DESMOND FULL SIZED Motor Boat Designs
Stock to order, $5 to $100 a set.
You cannot get as complete a design anywhere at any price.
Every design Tested. Guaranteed and Full Sized.
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State your requirements; we will do the rest.

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52 BROADWAY, NEW YORK, N. Y.
Telephone 4078 Broad
Plans, Specifications and Estimates furnished for all requirements
Descriptions and Photos submitted upon receipt of inquiry.

Yard and Shop

(Continued from page 56.)

Power Plant of the Homer 25-ft. Runabout.

Since publishing the plans of the 25-foot runabout designed by A. P. Homer for Mr. R. K. Eaton, in the May issue of MoToR BoatinG, we have been advised that Mr. Eaton has changed the power equipment of his boat. The power plant to be used will consist of a 15-20 h. p. Reynolds motor.

Kenyon Life Preserving Cushions.

The R. L. Kenyon Company, of Waukesha, Wis., who have been making motor boat tops for a number of years, are also manufacturing in large quantities for the present summer season the Kenyon Take-Down House and the Kenyon Life-Preserving Cushion. The houses are carried in stock and are made in all sizes from one to five rooms, costing from $50 to $320 complete, including hardwood floors, windows, screens, screen doors, ventilators and everything to make the house complete. The life-preserving cushion and pillow are guaranteed to fill the requirements of life preservers upon pleasure boats. They are guaranteed to support more weight and to support it for a longer time than a cork jacket, and the cost for the individual pillow is $1.50.

"True" Motor Boats.

A. R. True, 115 Haverhill St., Boston, Mass., has placed upon the market a line of boats of various types ranging in price from $150 complete with motor to $800, depending entirely upon the type of boat and the power equipment. An attractive 16-ft. dory equipped with a 3 h. p. motor may be secured for as low as $140 and a 30-foot hunting cabin cruiser equipped with an 18 h. p. motor for $825. Rowing skiffs built of eastern pine with oak timbers and galvanized fastenings, painted two coats, making excellent tenders are sold at $1.75 per foot.

Restless II.

We have been advised by Thomas F. Chesebrough that a mistake occured in the May issue of this magazine in reference to his new craft which is under construction. Restless II is being built by Woods & McClure, of City Island, instead of by the Atkin, Wheeler Company, and she is designed by Clinton H. Crane. She is of the monoplane type and will have triple screws driven by two engines of 250 h. p. each and one of 120 h. p.

Marguerite.

The power boat Marguerite shown upon page 56 was built by Stillman & Truitt, of Chillicothe, Ill., for use at Peoria, and her hull is constructed of Virginia white cedar furnished by Jordan Bros.' Lumber Co., of Norfolk, Va. She is powered with a 100 h. p. Scripps motor, and it is said that the exceptional speed of the boat, about 34 m. p. h., is due in large part to the extreme lightness of the hull.

A New Flag Ship for Motor Boat Club of Buffalo.

Commodore E. F. Dold, of the Motor Boat Club of Buffalo, has just announced his purchase of a 32 x 5 foot runabout from George Elliot. This will be a handsome and comfortable boat and is to be named the "Dold Quality." She will be fitted with a 35-55 h. p. Sterling six cylinder motor which is expected to drive her about 35 m. p. h.

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Yacht Designer and Builder
MARINE RAILWAY
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C. FRANK MOORE
Marine Engineer and Naval Architect
MOTOR BOATS AND ACCESSORIES
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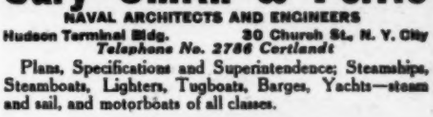

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Sketches submitted on receipt of your requirements.

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"BECCO" SPECIALTIES SAVE TROUBLE

STANDARD TERMINAL

Instantly locates ignition troubles. **Has a "Sparking Gap"** (see cut) which makes it an ignition terminal and spark-tester combined. Can be used without any spark plug; easily attached and detached. A little thing and inexpensive, but will earn its cost a thousand times over. ***Price, 15c. each***

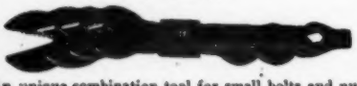
BATTERY CONNECTOR

It simply cannot break or work loose or go wrong. Every driver has known the annoyance connected with battery connectors. This connector is a positive assurance against such annoyance. ***Price, 10c. each***

SPECIAL TERMINAL

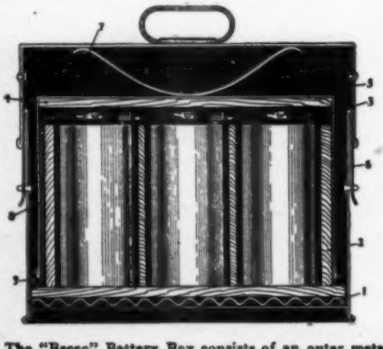
Has not only the "Sparking Gap" feature, but a "CUT-OUT," so that any cylinder can be electrically disconnected without removing the terminal from spark plug. All parts are insulated by means of rubber sleeve. Impossible to receive an electrical shock while manipulating. This is the last word in Sparking Terminals. ***Price, 35c. each***

WRENCH SET



An unique combination tool for small bolts and nuts. Fits eight different sizes of nuts, and also provides a screwdriver. Indispensable for the modern auto tool-box. ***Price, $1.00 each***

BATTERY BOX



The "Becco" Battery Box consists of an outer metal casing, in which is placed a corrugated bottom. On the corrugated bottom is placed a wooden box. An inner metal cover, provided with a wooden inner side, telescopes the wooden box. This battery box is substantially made in first-class style, of heavy-gauged tin handsomely japanned in black; holds six batteries.

It is not claimed for this box that it may be submerged without water entering it, but it does afford absolute protection from any amount of water that may descend upon it, and any amount of moisture that may collect below it; this is all that is necessary, for if a boat is submerged or going to sink, dry batteries will not help you.

Price $4.75 each

If you cannot get the above Specialties at your dealer's, write us for catalogue and prices.

Good Dealers wanted as Agents.

THE BECK COMPANY

Dept. N. Rockville Centre, N. Y.

Dubuque's Big Regetta.

(*Continued from page 51.*)

on the Mississippi and Stillwater on Lake St. Croix. The idea is to cruise along slowly, gathering force as each city is passed. When La Crosse is reached it is believed 125 boats will be in the fleet. La Crosse will add between 50 and 60 boats and by the time Cassville, Wis., is reached, which is 30 miles above Dubuque, it is believed that fully 200 or more boats will be in line. This will be the rendezvous for the Northern clubs on the night of July 2nd. On the morning of July 3rd the glad hand committee from Dubuque will conduct the fleet to this city and the camping sites.

The criuse from the South will be equally as notable. The boats from the Fox River, Green Bay and the Great Lakes will pass through the Drainage Canal to La Salle, Ill., and then to the Mississippi, either by way of the Hennepin Canal or down the Illinois to Grafton. At either of these two points they will join the fleets from the Missouri, Ohio and Mississippi and cruise north slowly, gathering strength as they go. Bellevue, the home of W. E. Hughey, owner of the "Red Top," and Joseph Kelso, part owner of the little champion "Comet," will be the rendezvous for the Southern fleet on the night of July 2nd. Here they will be met on the morning of July 3rd by the reception committee. The Southern fleet will be under the command of Commodore Bishop, of the M. V. P. B. A.

Navigating the Mississippi River is a simple matter. The channels are wide and deep and easy to find; dangers are practically unknown; storms are never feared; bathing beaches and camping spots are innumerable.

This fourth annual cruise of the M. V. P. B. A. is expected to result in bringing between 400 and 500 boats to the scene of the regatta. Press agents will accompany each fleet, giving it as much publicity as possible. No difficulty is anticipated, even if the river goes down to a zero stage, as boats will join the cruise at every city and town and show the fleet through the immediate waters.

Helpful Hints.

(*An answer to the 3rd Contest question.*)

THE first advice I should give to the man who has recently purchased a motor boat and is not familiar with the water is to learn the rules of the road, both for steam and sailing vessels, *thoroughly*. The etiquette is largely a matter governed by the different clubs, referring to precedence of boats, displays of club flags and signals, salutes and honors to club and visiting officials, etc., and is interesting and in many cases showy, but of minor importance when passing through a crowded fairway or navigating in a fog. In such times one should know just when to hold his course and when to give way, and what that horn or whistle he hears means.

If the owner will apply to the local inspectors of steam vessels for the "Regulations of Motor Boats" and the "Rules to Prevent Collisions at Sea" he will get more information in regard to running and riding lights, whistle, bell, fog horn, life preservers, etc., than could be given here, so I will leave these matters out of consideration.

The words "steam vessel" include every vessel propelled by machinery. An auxiliary, when using her engine and with the sails set, comes under the rules governing steam vessels.

A vessel is "under way" within the meaning of the rules, when she is not at anchor, made fast to the shore or aground.

A steam vessel shall always keep out of the way of a sailing vessel, and a sailing vessel shall always keep out of the way of a row boat.

When one of two vessels is to keep out of the way the other shall keep her course and speed.

In a fog, mist, falling snow or heavy rain the following signals shall be given, by steam

(*Continued on page 74.*)

(This is the 16-foot Ideal.)

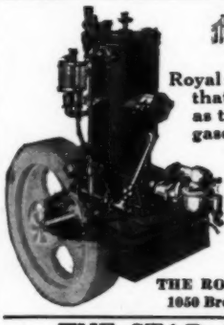
Gile Launches

The Boats—Speedy, powerful, safe, roomy, buoyant, reliable, with classy lines. High freeboard, graceful sheer. Hulls of weather-seasoned white oak and cypress—*sheathed inside*. Decks of oak or cherry. Bound with solid brass bolts and screws, and handsomely finished with best marine enamel and spar varnish. 16, 18, 20, 26-foot models.

The Engines—Famous 2-cycle, non-cranking Gile Engine noted all around the Great Lakes and on both coasts. Positively reversible—controlled by one lever, ahead and reverse. Its condensing chamber cools the exhaust, reduces back pressure and eliminates noise and odor. One, two and three cylinders. 3, 5, 6, 10, 15 horsepower—conservatively rated. Engines and boat equipment sold separately.

As a keen-sighted man who knows boat values, you should send RIGHT NOW for the handsomely illustrated catalogue. We'll mail it at once.

GILE BOAT & ENGINE CO.
307 Main St., Ludington, Mich.



THE ROYAL ENGINE

Royal engines are of the kind that keep running as long as they have a spark and gasoline.

They possess many valuable and distinct features.

Get our Catalogue and learn about them before purchasing.

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THE STAR AIR AND WATER PUMPS

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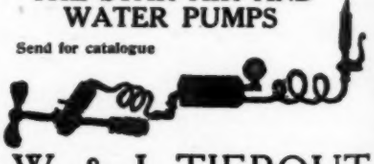

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MARINE HARDWARE
No. 118 Chambers Street
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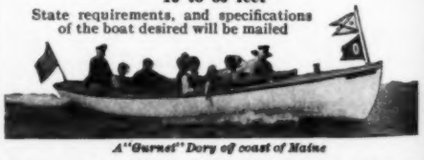
Send 4 cents postage for Marine Catalogue

The Seagoing "Gurnet" Dory AND Semi-Speed Clipper Launch

Shallow Draught, Noiseless, Noncapsizable, Safe for Off-Shore Boating, Desirable Anywhere

16 to 30 feet

State requirements, and specifications of the boat desired will be mailed



A "Gurnet" Dory off coast of Maine

The Atlantic Co., Amesbury, Mass.
Salesrooms: Boston, 83 Haverhill St. New York, 30 Church St.

ANTI-CRANK — LACKA-MOTORS

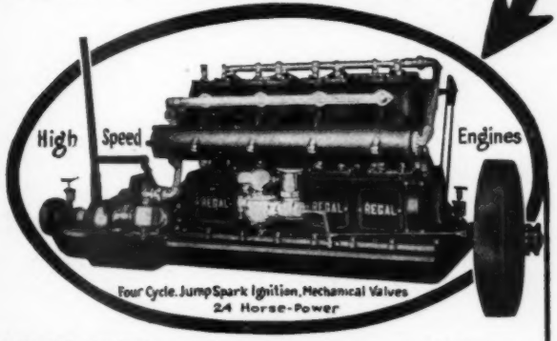
2 to 45 H. P. for all boats. THE WORLDS SIMPLEST Installed Operated by anyone. Complete Outfits ready for Rowboat or Schooner. GUARANTEED. TWELVE YEARS building, perfecting, success with THE ONE TYPE. Write to Originators of VALVELESS for new "MARINE BOOK" a liberal Educator to all, free.

LACKAWANNA MFG. CO., COLDWELL ST., NEWBURGH, N. Y.

For service, install in your boat a

REGAL MARINE ENGINE

EITHER A HIGH SPEED OR A HEAVY DUTY ENGINE AS YOUR NEEDS REQUIRE



The *Regal Engine* is above all a perfect service engine. It will always do its allotted work day after day without a hitch.

The *Regal Engines* now in use have continued up to date to give perfect satisfaction. We have scores of unsolicited testimonials to this effect. Read two of them here.

Jersey Shore, Pa.

Regal Gas Engine Co., Coldwater, Mich.

Gentlemen:—I am using one of your 20 H. P. engines and wish to say it has given the very best of satisfaction. The engine is installed in a 33 foot boat and averages over 50 miles a day.

Yours respectfully,
C. R. MILLER.

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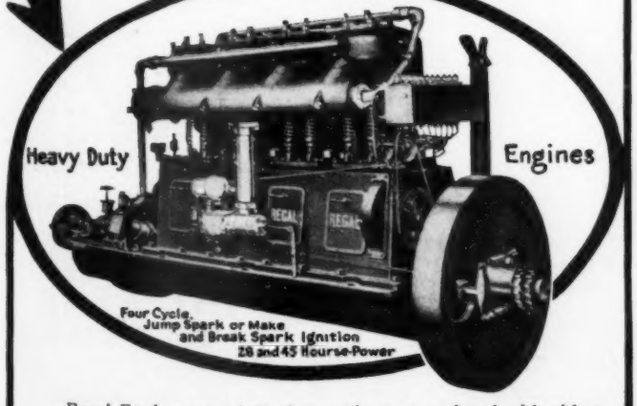
Regal Gasoline Engine Co., Coldwater, Mich.

Gentlemen:—I have installed the 16 H. P. Regal Engine in a new boat, the "Katie B," 26 feet by 4 feet, and it is giving perfect satisfaction. In a recent race held here, "Katie B" made an excellent showing. The race was over a four-lap course of 13 miles and we finished before any of the others had completed their second lap.

Yours very truly,
W. O. OXLEY.



Regal Engines are of the four-cycle type, equipped with either jump-spark or make-and-break ignition, and Bosch magneto. *Regal High-Speed Engines* are made with one to four cylinders and of three to twenty-four horse-power. *Regal Low-Speed, Heavy-Duty Engines* are made with one to four cylinders and of five to forty-five horse-power.

Send to-day for our 1911 catalogue No. 35, which completely describes and illustrates all types and parts of *Regal Engines*, and reproduces, as well, a few of the great number of testimonials that owners of *Regal Engines* have sent us unsolicited. Write now.

REGAL GASOLINE ENGINE CO.
74 W. PEARL STREET
COLDWATER, :: :: MICHIGAN

Marine Engine Sensations—and Extraordinary Selling Plan.

Ready to Install in Your Boat.

$40

2 H. P. Complete Reversible

Shipped complete with Shafting, Propeller, Stuffing Box, Ignition System, Controlling Lever, Spark Coil, Spark Plug, Battery, Wiring System under water. Exhaust, etc.

4 H. P. $63.75

Extraordinary value—develops more than the rated horse power—wonderful efficiency and control—especially adapted for hulls from 18 to 21 feet in length—the most popular engine in America to-day—complete at this startling price, including all equipment and a **Shebler Carbureter.**

3, 6 and 10 H-P. Engines proportionally low priced.

Before selecting a motor for your boat, get the whole story about the "Extra Efficiency" Northwestern engines; extra power, extra wear, and extra simplicity; the engine that "makes the round trip every time." Northwestern Motors are adapted for every class of hulls—for pleasure boats or heavy service.

They are easy starting—smooth running—durable—flexible—most wonderfully efficient engine on the market. Built in a well-equipped, modern factory, with an enormous output. Engines always ready for immediate shipment.

Can be speeded up or slowed down for fishing or trolling.

Exclusive Features

Northwestern Engine has patented features found on no other motor. Special gas-tight bearings make it easy to start, no matter how long it is run. This is the greatest improvement in two-cycle construction in a decade, and is a feature found only on Northwestern Engines.

The Northwestern Selling Plan

Confidence in our engine prompts us to put it up to our engine itself to demonstrate that our claims for its efficiency are not exaggerated. We ship the engine on absolutely 30 days' free trial, and if it is unsatisfactory at the end of the 30 days, money will be refunded without any quibbling. We make this offer unconditionally. Write for our startling proposition. You do not need to send us one cent.

Special Offer to Boat Builders and Dealers

We want every independent Boat Builder and Dealer to drop us a postal who is ready to make a profit-sharing alliance with one of the strongest financially and most progressive engine manufacturers in the country. Get our confidential dealers' prices and agency proposition.

1911 Catalog FREE. Write

Write at once and get our new 1911 catalog, describing in detail these wonderful engines—you will actually save 15% to 35%. Don't think of buying an engine until you investigate the "Extra Efficiency" Northwestern. Just write your name on a postal card and we will understand.

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750 SPRING STREET
Eau Claire, Wis.

Northwestern Steel & Iron Works,
750 Spring Street,
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Please send me the whole story about the "Extra Efficiency" Northwestern Motors.

My boat is ..... ft. long.

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Atlantic
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SPAR COATING
a perfect finish for all woodwork, spars and ironwork
Manufactured by **Edward Smith & Co.** Varnish Makers for 84 years
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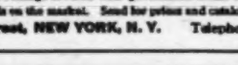
SPRAY  **HOODS**
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4 and 6 cylinder 20 to 50 H. P.
Write us to tell you more about them. Their quality and price will interest you.
KIRKHAM MOTOR MFG. CO., BATH, N. Y.

MR. BOATBUILDER:
Save 25 per cent. of labor cost of planking and decking on every smooth planked boat you build by using CUTLER'S PLANKING and DECKING CLAMP.
Prices: Large Size, $4. per doz. Small Size, $3. per doz. *Send for Circular.*
THE CUTLER CLAMP, 310 Lenox Ave. N Y City
Agents: F. A. Olmsted, 2562 3rd Ave., N. Y. C.; Eaton & Wilson, New London, Conn.; Monitor Boat & Engine Co., Newark, N. J.; The Hubbell & Wade Co., Bridgeport, Conn.; R. W. Newdick
(A) The Clamp (B) The Timber Green Harbor Mast.
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With my patented Outboard Connections anyone can safely and securely install this closet. Closet only $25.00. Outboard Connections with hose and clamps $5.00.
GUS. A. DIEM
Formerly CURTISS COMPANY
20 Fulton Street, New York City

Helpful Hints.

(*Continued from page 72.*)

vessels on the whistle and by sailing vessels on the fog horn. A prolonged blast is from four to six seconds and a short blast from one to two seconds in duration.

1—A steam vessel under way shall sound at intervals of not more than one minute a prolonged blast.

2—A steam vessel when towing shall, instead of the signal in Rule 1, sound three blasts in succession, at intervals of not more than one minute, namely one prolonged blast followed by two short ones. A vessel towed may give this signal and she shall not give any other.

3—In a fog, mist, etc., every steam vessel shall go at a moderate speed, exercising due care in regard to the existing circumstances and conditions, stopping or reversing her engines if necessary.

4—A sailing vessel under way in a fog, mist, etc., shall sound at intervals of not more than one minute: one blast when on the starboard tack: two blasts in succession when on the port tack, and three blasts in succession with the wind abaft the beam, or running free.

5—Vessels at anchor shall ring the bell rapidly for about five seconds, at intervals of not more than one minute.

These cover the principal rules for thick weather and we will now take up the rules for clear weather.

1—When two steam vessels are crossing so as to involve a risk of collision, the vessel having the other on her starboard side shall keep out of the way.

2—When two steam vessels are meeting head on or nearly so, they shall each pass on the port side of the other, and either shall give, as a signal of her intention, one short blast, which shall be answered by a similar blast from the other vessel signifying her understanding and acceptance of the signal.

3—If two steam vessels meeting find themselves too far to the starboard of each other to pass on the port side, either vessel shall give two short blasts signifying her intention to pass on the starboard side, which shall be answered by two similar blasts from the other vessel, signifying her understanding and acceptance of the signal.

In other words:

One short blast means, port your helm, I am directing my course to the starboard.

Two short blasts means, starboard your helm, I am directing my course to the port.

Three short blasts means, my engines are going full speed astern.

Five or more short blasts means signal not understood or a danger signal.

The vessel blowing first has the right of way.

These rules cover the main points and should be completely mastered before one attempts to take charge of a motor boat.

F. M. COMEE, Cambridge, Mass.

Fitting Out for the Cruise.

(*An answer to the 2nd Contest question.*)

BEFORE starting on a month's cruise the boat should be overhauled and painted, both above and below the waterline, and any minor repairs about hull or motor should be attended to.

See that all the ground tackle is dependable and have one heavy anchor and long cable as a "stand-by," so that if you are forced to anchor outside in bad weather you will not drag. This may be a 70-lb. kedge with 50 fathoms of 1-in. diameter manila. A 35 or 40-lb. anchor will be about right for regular use when cruising, and 35 fathoms of ¾-in. diameter manila will be suitable to use with it.

Have a reliable, well-adjusted compass and a good binnacle light (preferably a small electric light with frosted bulb). Charts of the entire region to be traversed should be carried, together with Government book of courses,

(*Continued on page 76.*)

NIAGARA AUTO-MARINE STEERERS
For Decks, Bulkheads and Open Boats. Mahogany Rim laminated. All other parts bronze, highly polished.
For particulars address
Niagara Gasoline Motor Co.
Makers of the
FAMOUS NIAGARA MOTORS
CLASSY and DURABLE
ECLIPSES ALL OTHERS
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(MARINE TYPE)
Electric Warning Signals and Accessories
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The Famous "Manhattan Make" (Made in yellow only)
Absolutely waterproof under all conditions.
LADIES' GARMENTS, too! Ask your dealer for a "MANHATTAN YACHTSMAN'S" Coat!
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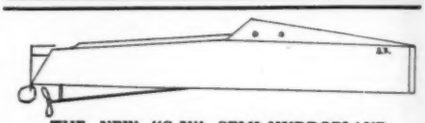
2-Cycle--All Open Base
A dozen superior features. Before placing your order for a gasoline motor, it will pay you to look over our catalogue.
VANGUARD ENGINE COMPANY
18 Tremont Street, Boston, Mass., U. S. A.



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The S. X. Speedboat Co., Newburyport, Mass.
Makers of High Grade Launches, Dories, & Skiffs.

Just the Thing for Motor Boats
Life Preserver, Pillow and Cushion combined.
Guaranteed to support the weight of the heaviest person in the water an indefinite time.
COLORS—Tan, Red and Green. Covered with the best quality artificial leather.
Price $1.50 by prepaid express.
Trade Solicited
Size, 16x16 Weight, 24 oz.
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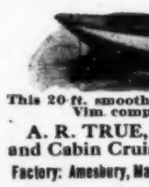
For Pleasure 450 Sizes & Styles All Types Cabin & Open For Business

BUILD YOUR BOAT BY THE GERE EASY METHOD
MONITOR BOAT FRAMES Newark, N.J.



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Write for our catalog and prices.
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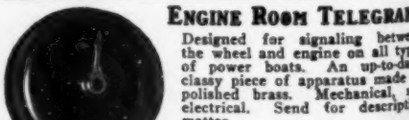
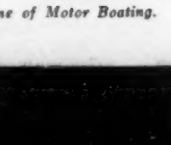


This 20-ft. smooth planked Dory, equipped with 5 H. P Vim, complete for $285; send for circular.
A. R. TRUE, Mfgr. of Dories, Whale Boats and Cabin Cruisers; also Fenders and Skiffs.
Factory: Amesbury, Mass. Salesroom: 115 Haverhill St., Boston, Mass.



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Designed for signaling between the wheel and engine on all types of power boats. An up-to-date, classy piece of apparatus made of polished brass. Mechanical, not electrical. Send for descriptive matter.
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Perfex Magneto

RECTIFIED

WEBSTER: *"Rectify"*—To make Right, to Correct that which is Wrong.

TROUBLE IMPS CONQUERED

DESTRUCTIVE SPARK *at* CIRCUIT BREAKER

This is the most prevalent cause of engine stoppage in low tension magnetos. We entirely overcome it by means of our "Rectifier." A scientific invention.

GOVERNOR TRIBULATION

Ever present when friction drives are used. If governor opens up too quickly, engine skips: if it refuses to open, voltage increases and "breaks down" armature insulation.

WEAK SPARK AT SPARK GAP

A trouble existing in many types. Our magnetos generate a hot, flat spark. The booklet explains why and how we secure it.

COMMENDATORY

April 21, 1911.

"I put the whole business (Perfex Ignition and the Perfex Magneto) to a severe test, by taking my boat out into the teeth of a small sized gale that kicked up a sea large enough to keep my engine streaming with water, and she ran steadily and evenly on the magneto. To say that my faith in "PERFEX" Ignition is stronger than ever, is putting it mildly. I think that this season will find the scoffers on Great South Bay taking a back seat."

CHAS. H. NORTON.

May 4, 1911.

"'PERFEX' Magneto is giving good satisfaction, and has increased my customer's power considerably."

PERFEX Ignition and the PERFEX Magneto make the only Waterproof, Jump Spark Magneto Ignition System in existence.

MODEL "A" PERFEX MAGNETO
LIGHT AND IGNITION
Alternating Current, Runs Either Way, Any Type of Drive, Grease Bearing

Price $20.00

MODEL "B G" PERFEX MAGNETO
LIGHT AND IGNITION
Alternating Current, Runs Either Way, Any Type of Drive, Ball Bearing

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THE BOTTLE

On board your motor boat, means liquid refreshment, comfort and convenience.

Thermos keeps tea, coffee, chocolate or any other liquid ice cold or piping hot until ready for use.

Thermos Bottles are as necessary to your enjoyment and comfort as a well running engine and you know what that means.

Pint Bottles, $2 up—Quart Bottles, $3 up.

Complete Lunch Kits, $5 up.

Do not be deceived into buying an inefficient imitation. Look for the name THERMOS plainly stamped on the bottom. At all first class stores. FREE: 34 page booklet on request.

AMERICAN THERMOS BOTTLE CO., Thermos Bldg., N. Y

You Want SPEED—STRENGTH—CONTROL

Get all Three by INSTALLING A

SINTZ

and save the wear on your motor.

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Eastern Agents: EASTERN MOTOR SALES CO. 1680 Broadway, New York, N. Y.

WILMARTH & MORMAN CO., 617 Canal Street, GRAND RAPIDS, Mich., U. S. A.

COMFORTABLE BOAT

Exhaust odors and noises are not pleasant. Why endure it? **For $4**

Reversible Underwater Exhausts solve your problem. The broad outlet and narrow depth give big suction to overcome back pressure; many get more speed than with atmospheric outlets.

You can't scoop water when backing it reverses.

	Fresh Water	Salt Water
PATTERN E S		
PAT. JULY 25, 1908.		
1¼-in.	$4.00	$6.00
1½-in.	4.75	7.00
2-in.	5.50	8.00
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Order today and get acquainted with the superior

Indispensable Motor Boat Devices

Best Values in Fittings, Wheels, Gears, etc.

Mechanical Devices Co., Watervliet, N.Y.

The Lord *Might* Have Made a Better Berry Than the Strawberry—But He Didn't

We Make High Class Yacht Tenders, Cabin Cruisers Runabouts, Speed Boats

THE RELIANCE MOTOR BOAT CO. 210th St. and Harlem River New York

ELLISON ADJUSTABLE MOTOR BOAT WHISTLE and BLOWER. PRICE $15.00

Operating instantaneously by friction with fly-wheel. Tone deep, mellow, pleasing. Best whistle made for small boats.

Send for circular.

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FISH BITE

quick as lightning if you use

Electric Fish Bait. It keeps you busy pulling them out. Catch loads of them. Write today and get a box to help introduce it. Enclose 2c stamp for Catalogue and Special Offers.

EASTERN SUPPLY COMPANY Dept. 27, Lapeer, Mich.

IS your boat worthy of a name? Then it's worthy of

A HICKOK NAME PLATE

They're the best made and they are not expensive. Write us today giving name of boat.

The Hickok Mfg. Co. St. Paul Street Rochester, New York

WECKLER BOAT CO.

2719 Irving Park Boulevard

CHICAGO, ILL.

Builders of all kinds of Water Craft

WRITE FOR CATALOGUE

Fitting Out for the Cruise.

(*Continued from page 74.*)

coast pilot, etc.

Look up the Government Motor Boat Rules and be sure that you have the entire outfit required. A life jacket for each member of the party should be kept in a get-at-able place (not below) and a ring buoy should hang where the helmsman can reach it for the benefit of a possible "man overboard." Fire extinguishers should be regularly kept both in the cockpit and below near the engine.

The boatswain's locker should contain canvas for serving the cable, etc., marline, twine, spare rope, caulking iron and cotton, and material for making emergency repairs anywhere about the boat.

Plenty of bedding will be needed, and two good blankets and a comforter for each berth will be found none too much, as the nights are often cool on the water, even in midsummer. Provide screens for the ports and other window openings, and sufficient mosquito bar to cover the skylight, companionway, ventilator cowl and fore hatch.

The dishes and glasses should not be too fragile. For the galley cooking utensils a good make of agateware is to be recommended. Suitable dish and tumbler racks will save much breakage during rough weather.

When provisioning a boat for a long cruise it is usually unnecessary to include all the supplies which will be needed for the party of four, since the ports visited can usually be depended on to replenish the larder, and sometimes at even less expense than the same articles can be had for at home. Certain staples must, however, be stowed in the lockers at the start, and the marketing en route will be mostly for the more perishable provisions—meats, fish, vegetables, fruit, butter and eggs. Milk will of course be a daily purchase if in a milk country, and ice should be obtained wherever possible. A roomy refrigerator with liberal ice capacity is worth much to the summer cruiser. Not less valuable is a large fresh water tank, and this should be of copper heavily tinned inside, with faucets in galley and toilet. A lack of fresh water is a genuine privation when on a cruise, so do not begrudge the space occupied by the tank.

In making up the list of supplies remember that the noonday meal will often be eaten while under way, and so have a proportion of the provisions of the picnic lunch variety. Below will be found a practical list which may be amended to suit individual tastes and requirements: The first items are for immediate use. 2 loaves of bread, 2 pounds butter, 1 quart of milk, 1 dozen eggs, 1 piece cold cooked meat or a cooked chicken, 1 loaf of cake, 1 dozen bananas, 2 boxes of berries, ½ dozen lemons, 10 pounds granulated sugar, 4 pounds loaf sugar, 1 box shaker salt, 1 package black pepper, 1 jar mustard, 1 bottle Durkee's salad dressing, 1 large bottle mixed pickles, 1 large bottle olives, 2 pounds coffee, 1 pound tea, 1 box Baker's cocoa, 1 package Hecker's self-raising buckwheat, 1 package Reliable self-raising flour, 1 package Cream of Wheat, 3 packages toasted cornflakes, 2 quarts maple syrup, 1 peck of potatoes, 2 pounds onions, 2 pounds breakfast bacon, 1 pound salt pork, 2 cans sweet corn, 2 cans tomatoes, 2 cans green peas, 1 dozen cans assorted Campbell's soups, 1 four-pound can luncheon tongue, 1 four-pound can boneless ham, 2 one-pound cans boned chicken, 2 cans luncheon sausage, 4 cans Heinz's baked beans with tomato sauce, 1 jar peanut butter, ½ dozen small cans condensed milk, 1 jar boneless herring, 3 large boxes of French sardines, 3 jars orange marmalade, 6 tumblers assorted jellies, 2 cans peaches, 2 cans plums, 2 cans Hawaiian pineapple, 3 pounds cheese, 6 boxes Uneeda biscuit, 6 pounds fancy crackers, 6 pounds pilot bread, 2 pounds sweet chocolate, 5 pounds of assorted candy, liquid refreshments to suit the taste. Take along a little lard for frying, greasing pans, etc.

Have everything delivered in time to allow of carefully checking off the items, and having possible omissions supplied before the hour for starting.

ALLAN O. GOOLA, Portland, Me.

WHY DON'T YOU

Use chairs in your boat this year?

FACE FORWARD

It's the correct way to enjoy a sail.

Make your launch a yacht by the use of our chairs.

Write for Catalogue

Wicker-Kraft Company

15 So. Water Street NEWBURGH, N. Y.

PYRMA ALUMINUM MATTING

The cleanest, cheapest and most servicable matting for motor boat floors, cockpits, stairways, etc.

It is easily laid, will not rust, stain or tarnish, can always be restored to its original brightness, and will wear longer than any other matting.

Stock sizes—9, 10, 12, 14, 15, 18 and 20 inch widths in 50 to 100 feet lengths; 24 and 30 inch widths in 24 feet lengths; and 36 x 84 inch sheets. Material cut to any size desired.

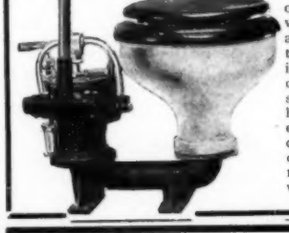
Samples and further information sent on request

METALLIC AUTOMOBILE MATTING CO. 277 Mill Street Rochester, N. Y.

The J. H. CURTISS CO.

MARINE WATER CLOSETS

2 SOUTH ST., NEW YORK



Very highest development of marine water closets for use above or below water line. 4-inch cylinder, discharges contents at third stroke, suitable for heavy work or owner's room. Will outwear any other closet. The gear makes it very easy working.

Get This Power Boat at Maker's Prices

Buy Direct from Manufacturer and Save Dealers' Profits

This Toppan Dory as illustrated above is made of best guaranteed materials and is the standard rough water boat of the world. Safe and reliable—used by U. S. Government in all departments. Send stamp for circular. Ask for prices and facts about Toppan Reversible Motors, built with 2, 3, 5, 8 and 12 Horse Power—and if you want to build your own dory, saving exactly HALF, ask for FREE KNOCK-DOWN BOAT QUOTATIONS. PRICE $150 AND UP. SIZES 16 FT. AND UP. PROMPT DELIVERY.

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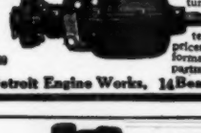
Nothing External Revolves

DETROIT REVERSE GEAR

STARTS—REVERSES—STOPS INSTANTANEOUSLY

All working parts submerged in oil bath at every revolution.

The Simplest, Most Reliable, Most Compact and the Smallest Perfect Marine Reverse Gear ever offered. No outside moving parts to throw the oil or grease, tear the skirts, bruise the hands or catch waste. No noise. Manufactured in sizes for from 2 to 80 H. P. We carry all sizes in stock for immediate shipment. Guaranteed for one year. Write for special prices and free catalog. Valuable information from our Consultation Department FREE to motor boat users.



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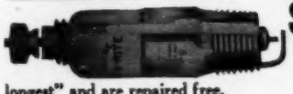
FORBES SWIRLING MUFFLER

can be adjusted at 7 different angles. The cooling effects it embodies reduce the escaping gases so they exhaust with practically no noise. It is compact, substantial and guaranteed.

MARINE DEVICES CO. 6 Lewis St., Boston, Mass.



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Spark plugs have "stayed right the longest" and are repaired free.

Double Porcelain—best for boats. *Price $1.00.*

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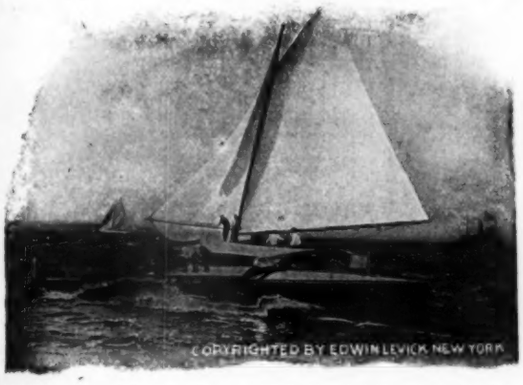
1840 *Marine Accessories* 1911



Everybody interested in sailing or motor-boating should own a copy of our

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Our Catalog Contains—

Valuable and interesting information on the care and handling of marine engines, and sailboats, written by men who are recognized authorities. In addition, it illustrates and describes our complete line of marine equipment, boat-builders' tools and supplies.

If you are interested send for a copy, inclosing 20 cents in stamps to cover mailing, which will be credited on first order. Your name on our mailing list will also insure your being kept thoroughly posted on new equipment for the coming season.

GEO·B·CARPENTER & CO.

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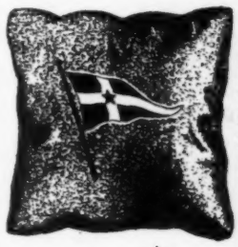

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Life Preserver Cushion

will make them INCIDENTS. With it the rescue is soon completed and the mishap quickly forgotten.

IT IS AN ABSOLUTE NECESSITY WHEN

Motor Boating, Yachting or Canoeing

A PERFECT LIFE PRESERVER and Handsome BOAT CUSHION. Comfortable and ornamental, covered with durable, artificial Spanish leather filled with non-absorbent Japanese fibre, impervious to water, with four times the buoyancy of cork. DELIVERED ANYWHERE in U. S., **$1.25.**

Send for samples of styles and colorings.

SPECIAL—These Cushions can be made up with your Club flag or burgee embroidered thereon. Write for prices.

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FREE 1911 MOTOR BOAT CATALOG SAVES YOU MONEY

No better or more complete *Motor Boat and Yacht Catalog* has ever been issued.

It describes in word and picture the greatest collection of watercraft necessities and luxuries ever gathered under one roof, in addition to Camper's and Fisherman's needs.

Our made-to-order specialties include sails, cushions, spray hoods, boat covers, flags, and yacht awnings at the lowest prices good workmanship allows.

Send us a trial order and get acquainted with the greatest Marine Hardware Concern in the United States.

We Sell By Post From Coast to Coast
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ROEBLING

Steer Your Boat

with

ROEBLING LAUNCH STEERING CABLE

A strong, pliable, durable and economical rope, consisting of a wire center, covered with high grade closely woven cotton yarn (not jute).

The center is made of thoroughly galvanized steel or *genuine bronze* wire as preferred.

The covering is furnished in standard colors and is treated with a waterproof compound.

If your dealer does not handle Roebling Cable, write to

John A. Roebling's Sons Co.

at **Trenton, N. J.,** *or*

Chicago, Cleveland, Philadelphia, Atlanta, San Francisco, Los Angeles, Seattle, Portland, Ore. John A. Roebling's Sons Co. of New York, N. Y.

Prompt shipments from stocks kept in the above named cities.

CROCKETT'S

Spar Composition

is the original—others followed—and it is the best known exterior marine varnish in the world.

For spars of yachts and boats of all kinds, canoes and oars (the outside of doors, piazza ceilings, store fronts, too, for that matter) it is beyond any doubt without an equal.

It cannot spot, crack, blister, or scale, and is absolutely proof against salt or fresh water and all sorts of weather.

See that you get your marine varnishes with this trade mark and you will know that you've got the best.

CROCKETT'S

No. 1 Preservative

The best Interior Finish for its price that brains and long years of experience can produce. It will not mar or scratch, nor will it spot, crack, blister or scale, and is not affected by contact with chemical or ammoniac gases, steam or washing with hot or cold water and soap.

For interior work on yachts and vessels of all kinds, also for hospitals, dwellings, schoolhouses, laboratories, pantries, water-closets, stables, etc., it is superior to any interior finish known. Can be rubbed and polished, or left with an egg-shell gloss.

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Silent Muffler AND Power Whistle Outfits

"YANKEE" MUFFLER

Constructed of galvanized sheet steel, riveted seams, asbestos lined. Water cooled for boats. Will operate successfully on 2 or 4-cycle gasoline engine. NO BACK PRESSURE. ABSOLUTELY SILENT. Sizes: ½ to 150 H.P. Satisfaction guaranteed. Over 200,000 in use.

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"YANKEE" WHISTLE

The Yankee Whistle Outfit may be attached to any gasoline engine of any make or description in a few minutes.

It takes no power from the engine. It has the only automatic CHECK valve that does not operate on compression.

AN EXPLOSION MUST TAKE PLACE IN THE CYLINDER OR VALVE REMAINS CLOSED.

No live gases can enter tank.

Polished four-tone chime whistle, galvanized air tank—equalizes engine pressure—valve closes automatically. Also provided with safety valve.

Complete as shown in cut—$10.00 to $30.00

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PASS GOVERNMENT INSPECTION

YANKEE MUFFLER PAT. AUG. 31, 1909.

VACUUM CHAMBER SILENCER

IN OUT

AUTOMATIC BRASS CHECK VALVE PAT. APPLIED FOR

PRIMING COCK

BRASS CHECK VALVE

COPPER TUBING

QUARTET CHIME WHISTLE

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SAFETY VALVE

This Magnificent Steel Launch

Stylish 16-Footer Fully Equipped with Engine Ready to Run!

$96

1911 models of the Michigan Steel Launch are now ready for delivery at the lowest prices quoted on boats anywhere. Our special low price schedule for immediate orders covers every launch we make—16, 18, 20, 23 and 27-footers. All sizes in stock for immediate shipment. We are the sole owners of patents covering rolled-seam constructed boats. This construction lasts practically a lifetime. We have the only construction that has successfully made the terrific trip through Grand Canyons of Colorado and Arizona. Write for booklet describing trip. Gold medals awarded our Boats and Engines by Royal Imperial Tech. Society, St. Petersburg; Internat'l Exposition, Milan; Nat'l Motor Boat Show, Paris.

Equipped Bow and Stern with Air-Tight Compartments. The Non-Sinkable Boat—Absolutely Safe! Needs No Boathouse

Leave your Michigan Launch in the water or out on the beach in all kinds of weather for months. It is puncture-proof. Equipped with the wonderful Detroit Engine, guaranteed for five years, any horse-power from 2 to 50. Fewest moving parts of any engine made. Anyone can run it. Free fully illustrated catalog shows all 1911 models. Don't buy a launch until you see this book. Write for special proposition and prices to Demonstrator Agents. STEEL ROWBOATS, $30. Need no boathouse. Big money in boat livery.

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Mechanically Perfect

Superiority in design and construction for which Mercury Motors have stood for many years, and standards of equality and reliability which have been synonymous with Mercury success, have been continued in their offerings for the season of 1911. For the ensuing year these motors will be built in six models.

6 HP single cylinder	30 HP four cylinder	60 HP four cylinder
14 HP two cylinder	40 HP four cylinder	100 HP six cylinder

ALL FOUR CYCLE

The Mercury is the consistent superior of superior motors. Gunfire II. won the Ellicott Cup at Ossining, New York, Labor Day; also first prize in 20 mile Auto Boat Class. Dell, owned by Mr. James Cassidy, finished first in the New York-Peekskill Race, distance sixty miles, equipped with 25 H. P. Mercury. Write for Mercury Book.

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Engines for Hard Service

Both marine and stationary, gas, gasoline, distillate, alcohol and fuel oil. 20 to 200 H. P. Economical and easy to start.

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If you want Good Circulation on your

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See our 18 ft. specials 3 H.P. $150.00 complete. We carry a large and complete line of everything that is required on a motor boat. Write for our new 1911 catalogue, 125 pages.

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Two Cycle, Single Cylinder, 1½ H. P.

$45 Complete with fresh water equipment. This is one of three splendid marine engines described in our 1911 booklet.

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Vertical and opposed four cycle, from 6 to 50 h. p.

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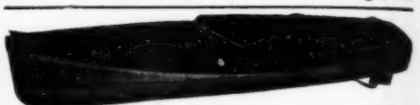

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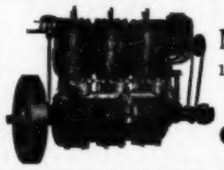

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With its SOLID STONE INSULATION it is especially adapted to Motor Boat requirements.

Not affected by oil or soot

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Forms part of the motor and need never be taken out

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With it you can control your boat as you would an automobile—stop, go forward or backward in an instant. Insure yourself against such emergencies by installing a "Baldridge" NOW.

The "Baldridge" is standard with nearly 6,000 enthusiastic motor boatmen. Built strong, compact and mechanically correct.

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We are still making the same guarantee to increase the speed of your boat ONE TO THREE MILES PER HOUR, the same as we have done for the past five years. Don't be misled in trying a substitute, and experiment, but get the ORIGINAL.

Ask any launch-owner who has used one. They are the best wheel that has ever been put on the market, both as to design, finish and material that we use, making them the most expensive wheel to put on the market. Still our large sales do not warrant us in advancing prices, leaving prices as formerly, the lowest price and the best propeller wheel made. Write for catalogue containing a large number of testimonials from launch-owners getting the increase of speed which we guarantee.

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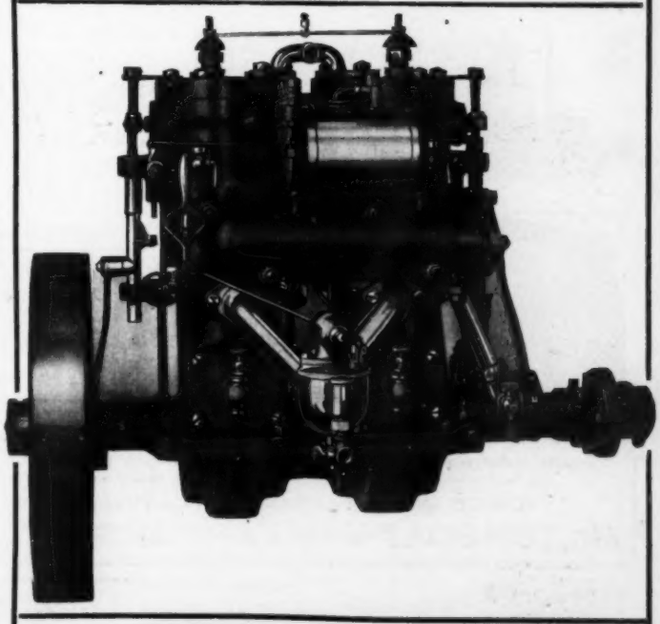
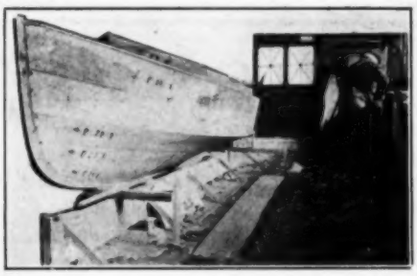
"THE MOTOR THAT MOTES"

Three Port System — One Carburetor — Perfect Control
No Base Explosions — No Stalling — Reliable

PRACTICAL — ECONOMICAL



The BRIDGEPORT MOTOR CO., Inc.
BRIDGEPORT, CONN.



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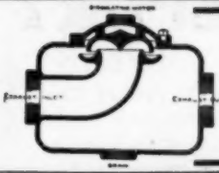

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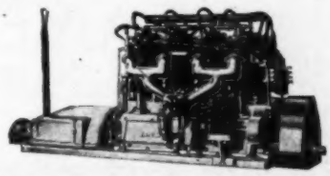

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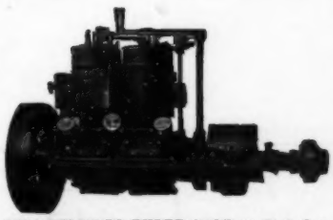

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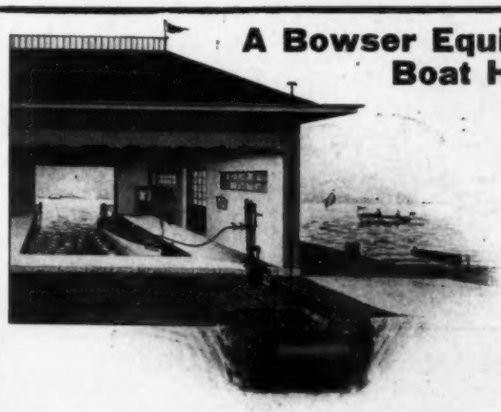

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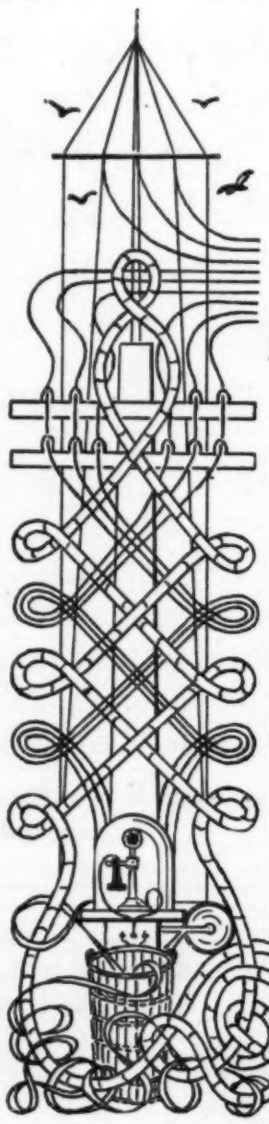

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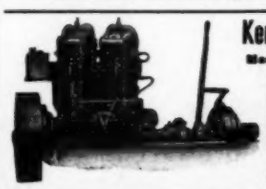

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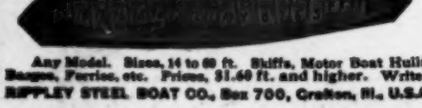

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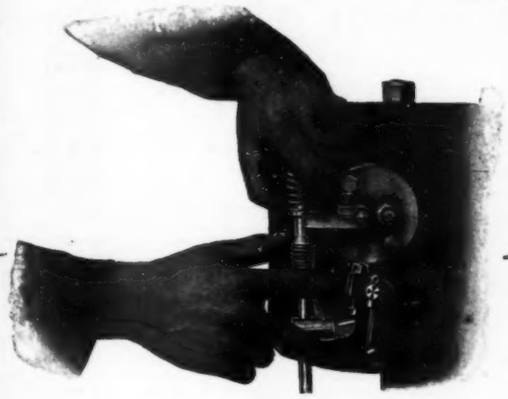

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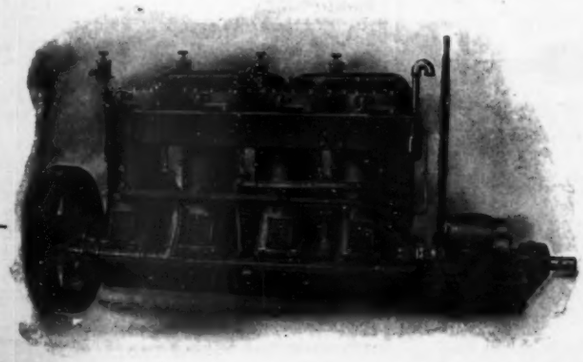

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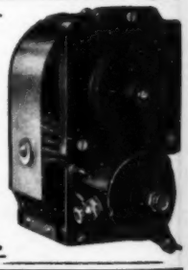

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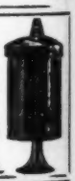

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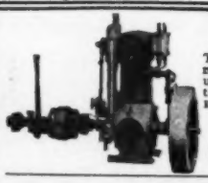
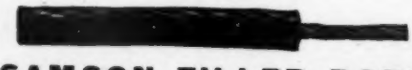


BUILT EXPRESSLY FOR HARD SERVICE

The most durable, reliable and economical marine motor made; 1½ H. P. upward, 2 or 4-cycle, marine and stationary gas engines. Send for our 1911 catalog.

STRELLINGER MARINE ENGINE CO.

171-175 Woodbridge St. W, Detroit, Mich.



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Solid braided cotton with center of bronze wires. Strong and durable, and will not stretch nor rust. Send for sample.

SAMSON CORDAGE WORKS. Boston, Mass.

Speed Indicators for Motor Boats

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Bullitt Bldg. Philadelphia, Pa.

VIM MOTORS

The Most Perfect Two Cycle Motor Made

Three types — for ordinary work, heavy duty and high speed,

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SIMMS MAGNETOS

The Simms Magneto Co., 1780 Broadway, N. Y. City

Representatives: London, Simms Magneto Co., Ltd. Paris, Cie des Magnetos Simms.

TROUT WHEEL

Two, Three or Four Blade. For Speed Boats or General Service.

TRADE MARK TROUT

Adopted by the Foremost Engine Makers of the Country.

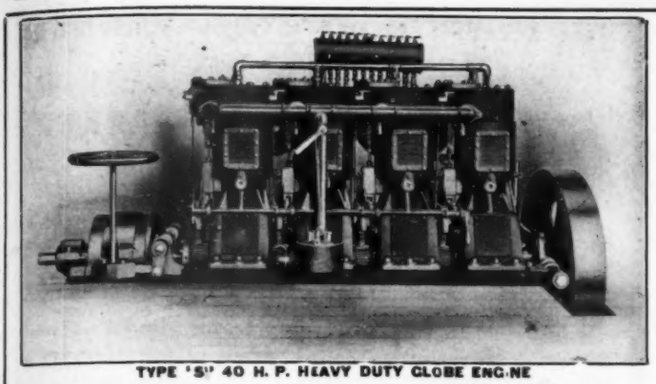
H. G. TROUT COMPANY, BUFFALO, N. Y.

Efficiency Reliability Durability

Write to-day for our beautifully illustrated descriptive catalogue for 1911. It completely describes "ERD" two and four-cycle Marine Motors. Let us figure on your requirements. We can save you money.

ERD MOTOR COMPANY

Saginaw, Mich. - - - - U. S. A.



TYPE 'S' 40 H. P. HEAVY DUTY GLOBE ENGINE

GLOBE

THE REAL HEAVY DUTY ENGINE

AND

EDDYSTONE-GLOBE

THE OPEN CRANK CASE TWO CYCLE ENGINE

TWO TYPES, SIXTEEN SIZES

WE HAVE THE RIGHT ENGINE FOR YOUR BOAT

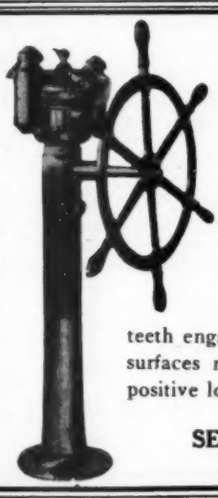
SEND FOR CATALOGUE TODAY

PENNSYLVANIA IRON WORKS CO., EDDYSTONE, PA.

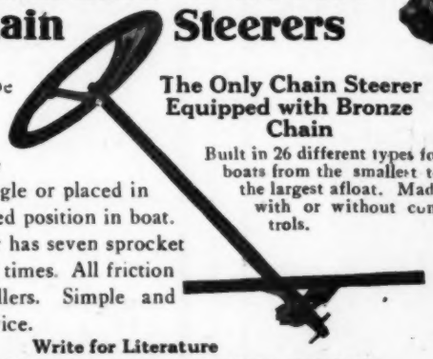
WE HAVE SOME GOOD REBUILT ENGINES FOR SALE (SIZES 25 H. P. TO 90 H. P.)

Seaman's Binnacle Chain Steerer

This is the only complete and self-contained binnacle gear on the market. It is built of polished bronze metal throughout and is light, neat, compact, powerful, most beautiful in design and has a simple and positive locking device.



Seaman's Patent Chain Steerers



Auto Type Chain Steerer, adjustable to any angle or placed in any desired position in boat. This gear has seven sprocket teeth engaged at all times. All friction surfaces run on rollers. Simple and positive locking device.

The Only Chain Steerer Equipped with Bronze Chain

Built in 26 different types for boats from the smallest to the largest afloat. Made with or without controls.

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SEAMAN MOTOR AND LAUNCH WORKS

LONG BRANCH, NEW JERSEY

Seaman's Combination-Type Steerer

with wheels removed to show regular and reversed cases for inside or outside of bulkhead or bolted to keel or under floor or deck with long post and column. Equipped with spoke-wheel, auto-wheel, or crank for side-steerer. Chains may also be rove in one end and out of the other, same as auto type, or at right angles to each other.

THEY ARE WINNERS

The Palm Beach Grand Prize Race

March 17th, 1911, for $2500 in Gold

The Most Important Motor Boat Race Held in This Country Was Won by the T & S, Equipped with a

HYDE TURBINE TYPE PROPELLER

Turned by a 100 H. P. Sterling Engine.

"BE WISE AND BUY A HYDE"

MANUFACTURED BY

HYDE WINDLASS CO., Bath, Me.

"BRIDGEPORT BRONZE"

Time has proven it a success *and*, has also produced many imitations.
Ten years have proved the worth of Bridgeport Bronze

OUR FAMOUS STAMP

We guarantee to refund the amount of this bill, if at the end of the season there is any sea growth on the bottom of the boat, on which two coats of our B. B. paint has been properly applied.

The Bridgeport Bronze Marine Paint Co.

It stands one year without growing grass or barnacles. It gives a racing finish as fast as pot lead

Bridgeport Bronze Marine Paint Company, BRIDGEPORT, CONN. Cable address "Lacquero Bridgeport"

Don't Buy an Engine until you get our 1911 ENGINE CATALOG mailed FREE

"HEAVY DUTY" Weco Engines

are built in the "Wright Way" for continuous service of the most severe kind. For all day and all night, week after week, month after month and year after year. No stops for repairs because there are no repairs necessary.

Theoretically and Practically

the most perfect two-cycle, valveless, silent, economical, simple

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There are no extras; every engine shipped ready-to-run; 5 to 75 horse power, 250-850 revolutions per minute.

Fuel consumption phenomenally low—**prices** ridiculously small—**terms of payment** suited to the slenderest purse. All explained in our **New Beautiful** Catalog for 1911, sent **FREE** to you.

This 6 H. P. HEAVY DUTY Engine with Complete Equipment for $110

C. T. WRIGHT ENGINE CO., 407 River Street, Greenville, Mich.

Have ELECTRIC LIGHTS on your MOTOR BOAT

The Motsinger AUTO-SPARKER

will generate current for ignition and lights for less money than you now pay for ignition current alone.

Saves its cost over and over again.

Suitable for all types and sizes of gasoline engines. Jump Spark or Make and Break. Water and dust-proof.

Sold on trial and fully guaranteed.

It will do for your engine what the high tension Magneto is doing for the automobile.

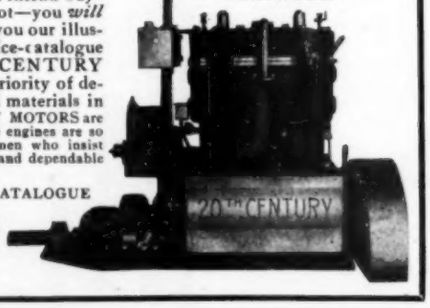
Write for our free catalog—it tells you how.

MOTSINGER DEVICE MFG. COMPANY 364 FIRST AVENUE LAFAYETTE, IND.

Twentieth Century MOTORS

12 TO 300 HORSEPOWER
2 TO 6 CYLINDER

No matter whether you intend buying an engine now or not—you *will* sometime—let us send you our illustrated, descriptive, price-catalogue of TWENTIETH CENTURY MOTORS. The superiority of design, workmanship and materials in TWENTIETH CENTURY MOTORS are the reason why these marine engines are so widely used by motor-boatmen who insist on having the most durable and dependable motor made.



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Morris Heights, N. Y.

The Gordon Reversing and Feathering Propeller

We make no objections; we make Gordon wheels. Our users have made for us all our claims, consequently we have proof. Where others fail, we succeed. Strength and durability, comfort and safety are common to the Gordon Propeller, which adds speed to boat and efficiency to engine. Experts can tell you the advantages of a sand proof hub, and every boatman knows what troubles are caused by fore and aft movement thru stuffing box. Specify a Gordon that has all the advantages and not any of the defects.

THE GORDON PROPELLER CO.,
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ELECTRIC SEARCH LIGHTS

Special Search Lights for Yachts and Power Boats

Can be used on the Smallest Launch or the Largest Steamship

All Sizes from 7 in. to 60 in.

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THE CARLISLE & FINCH CO.
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Get Next to our

Cash Prices

on Anything
For the Motor Boat

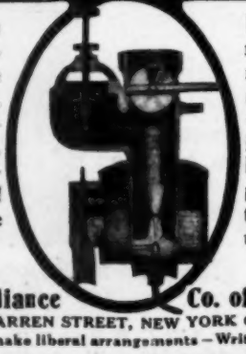
1911 Catalogue Mailed Free.

$2.98 E. J. WILLIS CO., 49c.
85 Chambers St., New York

MACO CARBURETOR

What more can you ask for in a carburetor than that it be the lightest, smallest, simplest, most compact, most efficient, most reliable carburetor in the world! This describes the

Maco Carburetor



It is the one carburetor that is so nearly perfect in its simplicity that it can't go wrong. It is not an experiment, but is a well-tried, proved carburetor that you can depend upon.

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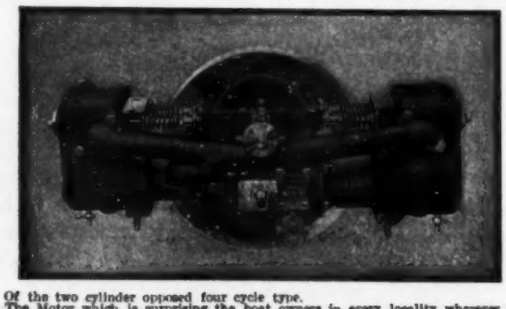
Motor Appliance Co. of America
731 WARREN STREET, NEW YORK CITY

Agents Wanted – We make liberal arrangements – Write for trade discounts

BEILFUSS MARINE MOTORS



Of the two cylinder opposed four cycle type.

The Motor which is surprising the boat owners in every locality wherever introduced, on account of their *compactness* (can be placed under seat is so desired), *economy* of fuel consumption, *non-vibrating* qualities, and their perfect *reliability*. When supplied with a good spark and plenty of gasoline they will run until stopped.

The owners of Beilfuss Motors are our best advertising medium. Why? Because they cannot say too much in their praise.

Write for circulars describing our 1911 style motors.

Thousands of unsolicited testimonials on file to prove the above claims.

Beilfuss Motor Co., 704 Saginaw St., E. Lansing, Mich.

A REVERSE GEAR IS THE CONNECTING LINK BETWEEN MOTOR AND MOTION

THE Motor Boat man using JOE'S IMPROVED MARINE REVERSING GEAR is always sure that a pull at the handle will cause his propeller to start, stop, or reverse, as desired.

He can be certain of this result because Joe's gear is sure and prompt acting, being built on correct principles.

It has but few parts, compactly and scientifically designed and constructed, and does not drag; but transmits to the propeller the full power and speed of the motor.

Joe's gears may be safely thrown to full speed in either direction without damage to the gears or motor.

Motion is transmitted to the gears through a powerful eccentric which brings a uniform strain on all the gears.

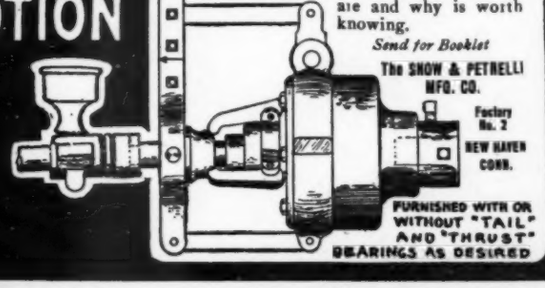
The slow equalized gear motion insures long life and kills all noise and grumbling.

Joe's gears are strong, efficient, reliable and durable.

Investigate and compare them with others and you will take no other make.

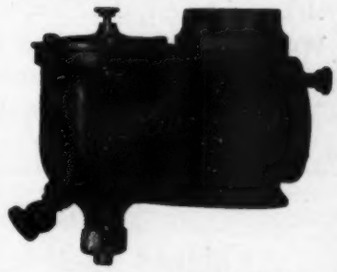
How Joe's gears came to be what they are and why is worth knowing.

Send for Booklet



AT LAST! A Carburetor that works with the Simplicity, Efficiency and Certainty of the Two-Cycle Engine

The EUREKA
SPECIAL TWO-CYCLE
CARBURETOR



No moving parts—no springs—no cork—no leather—no packing.

Long life—uniform results—absolutely dependable—great flexibility—maximum fuel economy.

AN exclusive feature of the EUREKA and one that places it far in advance of any other type of carbureter is an especially designed piston throttle. This throttle operates automatically, permanently and dependably at *all speeds*, in *any* weather, and with *any grade of gasoline*. It permits of almost the same degree of flexibility and control obtained in a steam engine.

Purchase Price Refunded
if the EUREKA does not operate to your entire satisfaction after 30 days' trial

Descriptive illustrated price list free on request.

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Main Office: 52 Wall Street
Showrooms: 141 Liberty St.
NEW YORK

Prest-O-Carbon Remover

Cleans Out Any Gas Engine

Motor Boat, Automobile, Motorcycle or Stationary.

Tearing an engine to pieces and scraping out the carbon is slow, hard work, and likely to do more harm than good.

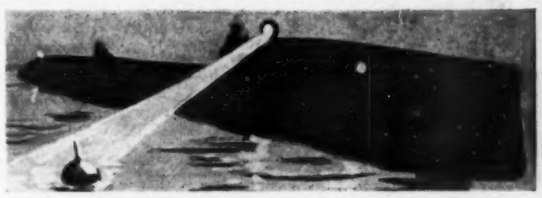
Prest-O-Carbon Remover injected in the cylinder loosens and removes all carbon from cylinder walls, piston, piston rings and valves. Cleans a cylinder perfectly in an hour for 25 cents or less. Increases compression, power and durability. Has no effect whatever on metal—cannot injure the engine in any way. We guarantee this. Easy to use—directions on can.

Try It Under This Guaranty:—

There are many imitations of our preparation, so to make sure you get the genuine article, send us your order and we will ship you, express prepaid. (Quart, $1; half gallon, $2; gallon, $3.75.) If you are not fully satisfied with the results, simply tell us and we will promptly refund your money.

The Prest-O-Lite Co., 260 East South St. Indianapolis, Ind.
(*Makers of Prest-O-Lite Gas Tanks.*)

SOME DARK NIGHT
You'll Need a Good Light



For Lighting Dyneto For Ignition

Type J. Dyneto geared direct to engine or chain driven. No Governor or Rheostat to bother with.

Keeps 3-cell, 6-volt storage battery in full working charge. Supplies searchlight, port and starboard lamps, cabin lamps and portable lamp on cord; electric horn, fan, etc. Just as dependable as the light in your home or office.

Write today for description of complete outfit and price list. Live agents and dealers wanted.

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HYDROPLANES

The Newest Development in Speed Boats

FAST SEAWORTHY ECONOMICAL

Working Drawings and Complete Boats

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Boat and Engine Book MAILED FREE

Just like a 30-Footer Only Smaller

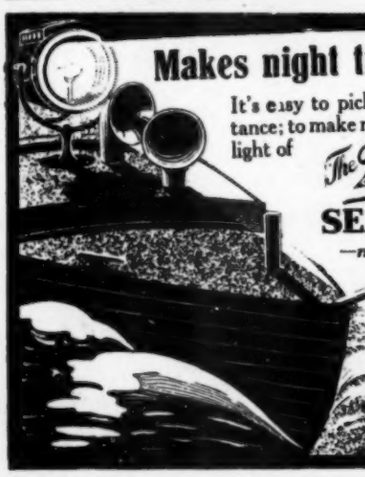
Do not think of Buying a Launch or Engine until you see our Handsome Book

Which Explains Four Wonderful Launch Bargains Only $121

for this complete 16-ft. Launch—3 H. P., guaranteed self-starting Engine, weedless Wheel and Rudder. Result of 30 years' experience. Money back if not as represented. Write for free catalog to-day. Special Bargains in **WECO** reversible, self-starting engines to those building or buying their own hulls. Engine controlled by one lever. Don't fail to write at once for the **Free Catalog.**

C. T. WRIGHT ENGINE CO., 5002 Canal Street, Greenville, Mich.

Makes night trips safe as day



It's easy to pick up buoys at a safe distance; to make night landings by the intense light of

The Neverout

SEARCHLIGHT

—more powerful than any other gas searchlight.

Back it up with the Neverout Patent Acetylene Generator, which instantly makes perfectly cool acetylene gas for searchlights and for interior or exterior lighting. A most economical, effective gas generator.

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SAVE from $12 to $22 by Installing a Scout Closet

We guarantee this leather valved yacht closet to be equal to any other leather valved closet selling for up to $50. This is built to meet the demand for a high-class fixture at a low-class price.

The Scout Yacht Closet

occupies a space of only 15 inches by 15 inches by 10 inches high. The leather of the valves are specially treated for sanitary reasons, and need be renewed only once each season.

We are manufacturers of all styles and kinds of marine plumbing fixtures. We can equip anything from a small cruiser to an ocean liner.

Send for our 1911 catalogue.

GOBLET - DOLAN CO. **32 Old Slip, New York**

The Speediest, Surest 5 H. P. Engine Ever Built

This Wonder engine is the smoothest running, most powerful gasoline engine ever used to turn a propeller. Hundreds have proven it a wonder in easy and *always reliable* operation, strength and durability.

By careful designing and practical test we have produced a simplified, compact, lighter engine with fewer moving parts, less vibration and noise, and yet much stronger, more efficient and reliable than any other of similar capacity. Free from tinkering and repairs.

Wonder Engines Guaranteed for 5 Years

$75 for this 5 H.P. Complete Engine and a solid propeller.

We make engine from 2 to 75 H. P. There are more than 3,000 in use in this country, all producing the highest degree of efficiency, durability and smooth running at a minimum of cost. Send for catalogue of Wonder Marine Engines *today*. Prompt shipments. Get our plan of easy terms to reliable parties.

THE WONDER MFG. CO.
260 Tallman Street, Syracuse, N. Y., U. S. A.
VERY ATTRACTIVE PROPOSITION FOR LIVE AGENTS

"ADVANCE" 37 ft. x 7 ft. Semi-Cruiser

This boat won first prize at Interlake Regatta, Put-in-Bay, making 20 actual miles per hour, equipped with one of our 60 to 80 H. P. high speed motors. Can furnish this outfit complete. Price upon application.

"VANBLERCK" SPEEDER, 38 ft. x 4 ft. 6 in.

Made a flying trip over Lake Erie (Detroit to Buffalo) in 11 hrs. 5 min. without a hitch, the fastest time ever made by water. Won first prize at Elks' Carnival, cup and flag, speed over 32 mi. per hr. Can do flying mile in 1.47. Equipped with two of our 60 to 80 H. P. high speed motors. See article.

"VANBLERCK'S"

1911 Models are now ready. 2, 4 and 6 cyl., 12 to 40 H. P. 4 and 6 cyl., 40 to 80 H. P. high speed. These motors are as good as mechanics and materials can make them, and will pay you to investigate. Price is right. Write for agents' proposition.

New York Branch, Gasoline Engine Equipment Co. 135 Liberty Street, New York, N. Y.

VanBlerck Motor Co., Detroit, Mich.

Our bronze chains have **solid cast links**—not brazed—and are the strongest chains made for

MARINE PURPOSES

Especially adapted for rudder chains, passageways, etc.

These chains, being bronze, cannot rust, nor will they corrode. No staining of woodwork possible.

SIZES, 3-16 inch to 5-8 inch diameter

and made in any length from one foot up.

Prices on application to

ALLISON BROS.
Manufacturers
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Packard CABLE

Always Inspires Confidence

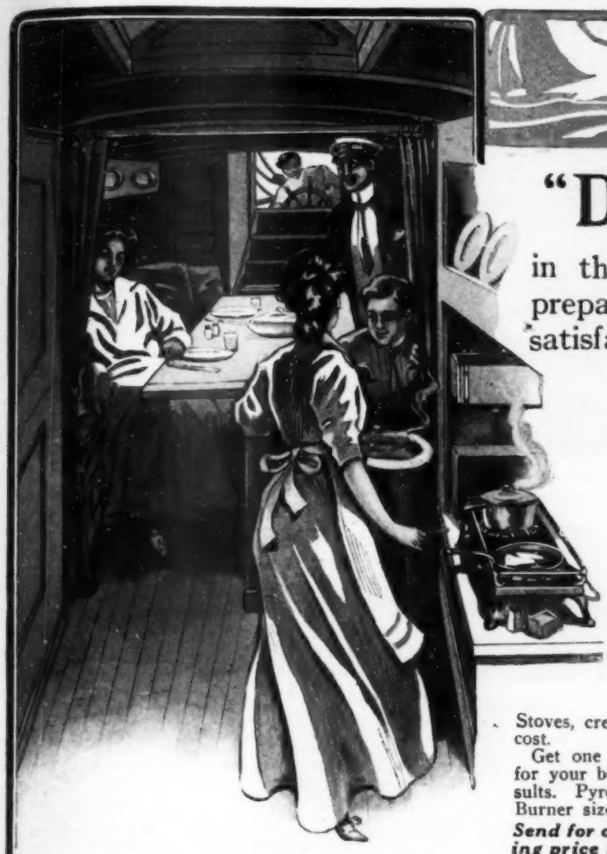
BECAUSE

It Is Far Superior.

A USER SAYS: "I use Packard Cable for marine work and find it **more than satisfactory.** I shall specify it for my next year's boat. It is specially adapted for use under the decks where **ordinary cable** becomes useless in a few months."

Its much longer life makes PACKARD CABLE THE CHEAPEST.

THE PACKARD ELECTRIC CO., 322 Dana Ave., Warren, O.



"Dinner is Served"

in that snug little cabin and each article of food prepared to a nicety. There's a vast amount of satisfaction in cooking upon

PYRO MARINE STOVES

These stoves are especially adapted for marine use. They give the maximum of heat and concentrate it in the proper spot, unaffected by the careening of the boat. They consume very little space, are light, compact, portable, odorless and smokeless.

Pyro Marine Stoves are constructed of galvanized cast iron absolutely rust proof. The burners are cast of brass and the tanks are brass, nickel plated. A guard rail is fitted to each stove to prevent the sliding of cooking utensils.

Denatured Alcohol—the fuel used in Pyro Marine Stoves, creates an immense heat at very little cost.

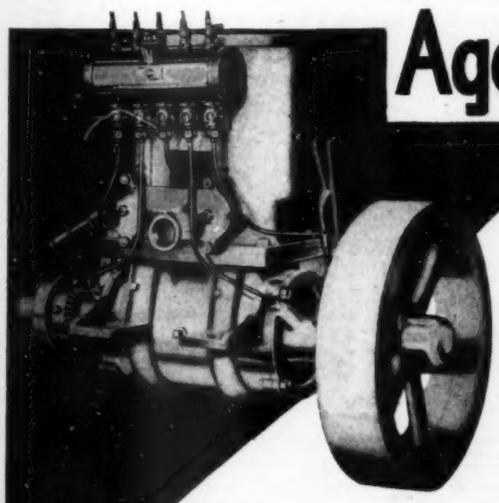
Get one of these splendid Stoves this season for your boat. You'll be delighted with the results. Pyros are made in one, two and three Burner sizes.

Send for our descriptive literature, including price list, today.

THE ALCOHOL UTILITIES CO.

40 East 21st Street **New York**

Agents! Write to us TO-DAY!



High-speed, slow-speed, heavy-duty, power for racing, pleasure and work boats.

Get the complete information about our new models of ECLIPSE MOTORS.

This is a splendid opportunity to ally yourself with a firm which treats its agents "right" and sells a good engine. Perhaps the very territory where you live is waiting for a live, hustling, active man with sales ability and a desire to advance himself. Our new campaign for agents is bringing dollars and dollars into the pockets of men who are far-sighted enough to realize the value of our offer.

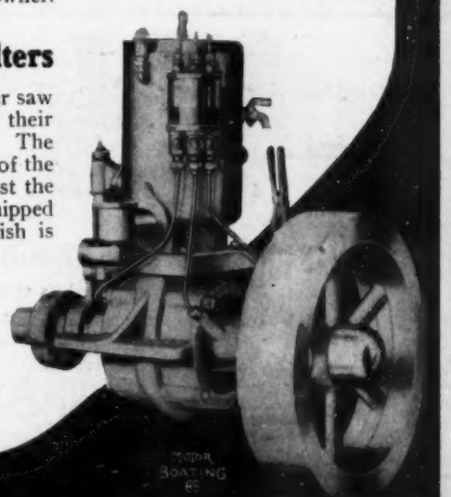
The Eclipse Special is a *very superior motor*—a motor of handsome finish and unexcelled workmanship—a beautiful piece of expert mechanical work—quiet-running as the fall of night—fully guaranteed—simple—practical—a joy to the owner.

The Eclipse Never Falters

It runs as steady as the tide for all sorts of owners. Many men never saw engines before they owned the "ECLIPSE." These same men by their praise and satisfaction have sold engines for us over and over again. The ECLIPSE ENGINE is not an ordinary engine. It is found driving some of the finest water craft in America. Poor men and wealthy boat owners both attest the marvelous simplicity and splendid running qualities of this engine, which is shipped with a maker's ironclad guarantee that the quality under the fine enamel finish is absolutely first-class.

Built in seven sizes—from 1 to 10 h.p., both single and double cylinders.

Our Catalog C is handsome, and gives interesting engine information. We will mail it free on request if you send today.



ECLIPSE MOTOR COMPANY

76 CASS STREET ::: TRAVERSE CITY ::: MICHIGAN

Make any rowboat a power boat in a minute

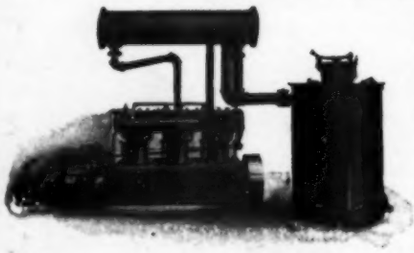
Any rowboat can be made an efficient power boat by simply clamping to the stern an Evinrude Rowboat Motor. Fits any shape boat or stern. No brackets or alterations to boat necessary. Speed as high as 7 miles an hour. Not affected by waves, spray or weeds.

Evinrude Detachable Rowboat Motor

Does away with the tiresome rowing. It is simple, compact, light and smooth running. All fishermen, outers, vacationists and hunters should have one. Engine and gasoline tank weigh about 32 pounds and can be carried like a suit case. Catalog with illustration and descriptions of this marvelous motor FREE. Write.
Agents wanted.

Evinrude Motor Company
725 Reed St. Milwaukee, Wis.
Walter Coleman & Sons, Rhode Island Representatives, Providence, R. I.

The Cheapest and Safest Marine Power



Operates on many of the good makes of four cycle gasolene engines at one eighth the cost. 25 to 5,000 H. P. sizes. Our catalogue tells you how to use and all about it We guarantee results.

Marine Producer Gas Power Company
2 RECTOR STREET, NEW YORK

The BROWN MOTORS

Manufactured by
The B. F. BROWN GAS ENGINE COMPANY
412 Warren St., Schenectady N. Y.

Brownie Canoe Engine
Weight 60 lbs., 3 h. p., 100-1200 revolutions
Write us today.

THE EASTERN MOTOR SALES CO.
1680 Broadway, New York

C. FRANK MOORE
220 Devonshire St., BOSTON
New England Representative

Don't purchase until you have read in the *Brown Catalogue* what a really good motor consists of, made in sizes from one H. P., one cylinder, to 80 H. P. six cylinders.

THE VISIOSCOPE STEREO-BINOCULAR
Power 7 Times

This glass is especially adapted for marine use. It has a very large, clear field, brilliant illumination, and depth of focus. The Price is $33.75.

RELIABLE DEALERS SUPPLIED

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REVERSE GEAR
for
MOTOR BOATS
Made Only of
HARDENED STEEL SPUR GEARS

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HIGHEST GRADE
EASIEST TO INSTALL
FOUR SIZES CARRIED IN STOCK

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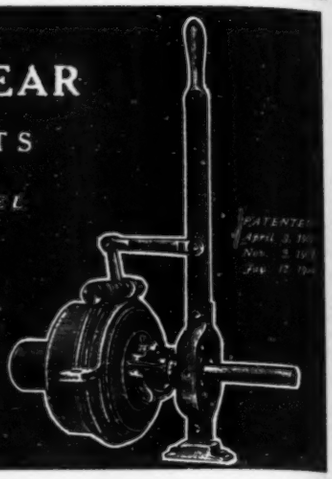

NEW YORK GEAR WORKS
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BROOKLYN, N. Y.

MOTOR BOATS FOR ALL REQUIREMENTS
Boats In All Stages of Construction

Whaleboat 25 x 5 x 7 Inches

We build boats of all sizes and types. We build them and ship in knock-down frames, complete hulls or complete boats fully equipped all ready to run.

You Can Build Your Own Boat, It Will Cost About One Half

You will enjoy building your own boat from frames or patterns by our method. We supply you with frames you can assemble without boring a hole or cutting a shaving. Our "NIAGARA QUALITY" frames are years ahead of all others. They are designed by the best naval architects and are perfection in every detail. Our models, in competition, both for speed and seaworthiness are considered by owners everywhere to be the best in the world. Let us show you what we can do. Your interests demand a copy of our catalogue. Send 5c. for mailing. It means money and satisfaction to you. Write us.

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210 Sweeney Street North Tonawanda, N. Y.
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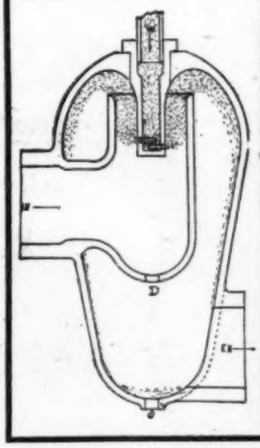

Nonoi Silencer

WITH the Nonoi Silencer you not only silence your engine, but cool your exhaust as well. Made in three sizes—1½"—2"—2½". In ordering mention whether for 2 or 4 cycle Motor, number and size of cylinder. *Write for Price.*

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New York: 31 E. 21st Street
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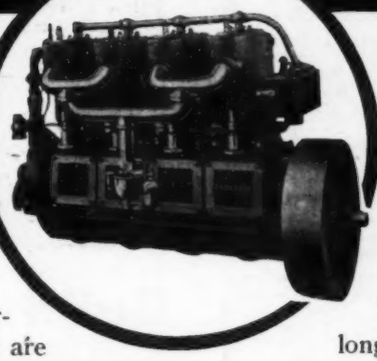
If the KRICE CARBURETOR *does not give you* 20% *more power and more economy* RETURN IT AND GET YOUR MONEY BACK

Specify it on your engine-you take no chances. We guarantee satisfaction

Krice Carburetor Co. Detroit, Mich.

ANDERSON

MARINE ENGINE



Consider this engine, it spoils not neither does it din. It is silent, swift and efficient. It is easy running, powerful, true and dependable. There are other engines, good, bad and indifferent engines, but, there is no engine in the engine world that does its engine-duty, its whole duty and nothing but its duty—like this Anderson Marine Type. This is our four-cylinder five by six; the up-to-datest, high-grade engine you can get. Every part is fitted, adjusted, tested. It is standard throughout and every part the standard.

It saves you money by lasting longer, requiring less attention than any engine made. We make this engine in sizes all the way from a 2½ H. P. single to 150 H. P. six-cylinder.

Buyers are writing in now for our descriptive matter. Let us send you full particulars. And the story is worth reading; well worth reading.

ANDERSON ENGINE CO. : : Shelbyville, Ill., U. S. A.

"SANDS" MARINE SANITARY FIXTURES

USED ALL OVER THE WORLD

PLATE S-34

The "Knockabout" Improved Pump Water Closet, round flushing rim bowl, composition foot valve. Oak seat and cover; heavy N. P. brass post hinges.
Pump rough, finished trimmings, oak seat and cover..$52.50
If mahogany seat and cover, add 1.50
Weight: Net, 45 lbs.; Gross, 75 lbs.

PLATE S-126.

The "Glenora" Composition Flange and Coupling for use on supply and discharge pipe of closets, straight or bent coupling.

PRICE.

¾ in.	$2.25
1 in.	3.00
1½ in.	5.25
2 in.	8.00

Composition flat strainers furnished with the ¾-in. and 1-in. size at 25 cents extra.

PLATE S-150

The "Glenwood" Folding Lavatory, with Vitro-adamant roll rim lipped oval basin, N. P. copper lining, soap and brush holders. N. P. brass pump, towel rack. N. P. brass trimmings.
Quartered oak, polished finish.....$42.50
Mahogany, polished finish, add..... 1.50

PLATE S-130

The "Alton" Brass Supply or Inlet Connection has perforated strainer on suction side. Used for supply to closets, lavatories, engines and pumps.

Size	Iron Pipe	Lead Pipe
¾ in.	$1.75	$2.00
1 "	2.25	2.50
1¼ "	3.75	4.25
2 "	5.00	5.75

PLATE S-44

The "Malta" Pump Water Closet for above or below the water line, round flushing rim bowl, composition supply and discharge pump, quick-opening supply valve, oak seat, N. P. brass post hinges.
Pump rough, with finished trimmings $30.00
If with mahogany seat, add..... 1.00
Dimensions: 14-in. back to front, 18-in. wide, 11-in. high to top of bowl, 13-in. to top of seat.

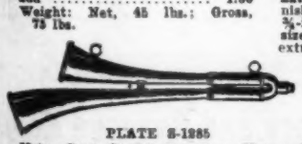


PLATE S-1285

Motor Boat Signal Two-Tone Horn with mouthpiece. Fulfills the U. S. Government requirements as signaling device for small boats, highly-polished brass and nickel-plated. Length 10¾ inches.
Style "A"—Arranged with rings for fastening cord. German Silver Mouthpiece.
Polished Brass.....$2.25
Style "B"—Arranged with bracket to screw to deck; blown through removable extension tube.
Polished Brass..... 2.25
Mohair-Covered Rubber Extension Tube, length with Mouthpiece and connection to horn..... 0.75

Double Acting Brass "Auto" Bilge Pump.
15 inches long under spout, 5 feet rubber hose and coupling, heavy pattern.

No. 1,	1⅛-inch diam.	$3.00
No. 2,	1½-inch diam.	4.80
No. 3,	1½-inch diam., 24-inches long	5.80

PLATE S-750

Immediate shipments from stock

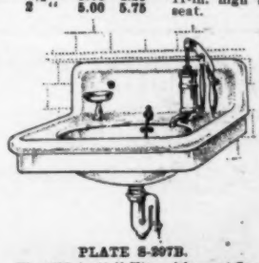


PLATE S-297B.

The "Majestic"-Vitro-Adamant Lavatory in one piece. N. P. double acting brass pump. N. P. brass full "S" trap, with waste pipe to deck, white enameled bulkhead brackets.
Price $35.00

PLATE S-132½

All Cast Bronze Heavy Pattern Combination Inlet Connection, with Strainer and scoop.
Can be used on all inlets and particularly for the circulating water connections for high-speed launches.

	Size.	I. P.	L. P.
No. 0..	½ in.	$2.25	$2.65
No. 1..	¾ in.	2.50	2.90
No. 2..1	in.	3.00	3.40
No. 3..1¼	in.	3.75	4.25
No. 4..1½	in.	4.50	5.00

Complete line of closets, lavatories, portlights, deck plates, basin and galley pumps described in catalog "R" sent upon request

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is the average speed of this fastest shoal houseboat in America. Last Winter the shallowest shoals in Florida were ranged by the trim, speedy

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Specialists in 60 to 100 ft. cruisers and houseboats
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SCOTT TOURIST PACKAGE 24 for $2.00

Each packet contains 6 Scot Tissue Towels, a Wash Rag, Toilet Soap, Scot Sani-Komb, and a packet of Sani-Tissue.

Send your $2 today ($2.40 if W. of Miss. River) and learn the meaning of comfort and cleanliness when travelling.

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Have no carburetor, valves, cam shaft, gears, electricity or adjustments of any kind. These big features of simplicity recommend themselves to the motor boatman.

The illustration presented here is the tow-boat "Amonita"—length 40 feet, beam 10 feet, draft 16 in.—equipped with two 14 h. p. Remington Oil Engines. Tows barge carrying 16 tons of bananas on the Ulva River, Spanish Honduras, in rough water against wind and tide.

Before you finally decide on the engine for your boat, send for the Remington Oil Engine Catalogue today—now.

The Remington Oil Engine Co.
Stamford, Conn.

Build Your Own Boat

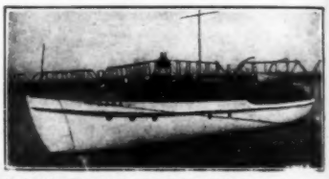
This picture shows one of our 45ft. cabin cruiser frames ready to take apart and crate for shipment. Everything is done right up to the point where planking is to be put on. One man can re-assemble this frame and have it ready for planking in six hours' time. Any man, experience unnecessary, can finish this boat and fit it with power for less money than he would have to pay for the cheapest 25ft. cruiser offered by any manufacturer of completed boats to-day. We carry a full line, from the canoe to the 65ft. cabin cruiser.

Our Finished Boats

You may not have time to build your own boat. Cabin cruisers are our specialty. Write us and we will convince you that other manufacturers cannot meet our prices on finished boats. Let us quote on your specifications for a boat of any type.

The superior excellence of our designs; beauty, seaworthiness, and speed in our boats; and a square deal and popular prices have brought us in the past five years from a small, unknown factory to rank among the largest and best known builders of both knock-down and completed boats in the land.

We make a specialty of knock-down frames for large cabin cruisers, but as a result of our frame business, can quote prices on finished cruisers that cannot fail to interest.



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DEFOE BOAT & MOTOR WORKS, 3216 STATE STREET BAY CITY, MICH.

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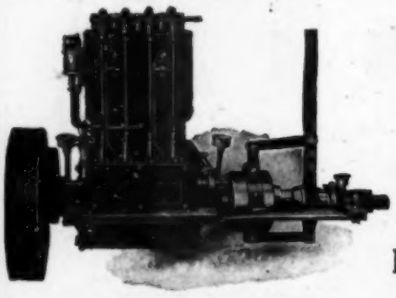

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The Frisbie Motor is made in one, two, four and six cylinders, ranging from three to EIGHTY horsepower—four cycle.

It is simple, having all valves in the head of the cylinder. That means power.

In materials and workmanship, as well as design, it is second to none.

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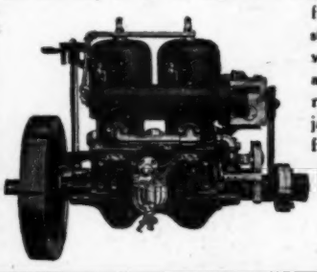
Frisbie Motor Co.
Middletown, Conn.

NOT light enough to be freakish. Not heavy enough for ballast, but both light and heavy enough for good hard work in either a racing, pleasure or working boat. A common sense engine with material, workmanship and price to match. Simple and reliable. It is not necessary to be an engineer or mechanic to operate a L-A motor, for we furnish all instructions necessary to install and operate; so the merest novice will experience no difficulty in setting up and operating. Our new catalogue is ready. May we send you a copy? It is jammed full of engine information, and free for the asking.

L-A MARINE MOTORS
POWER SPEED & RELIABILITY



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Inc.
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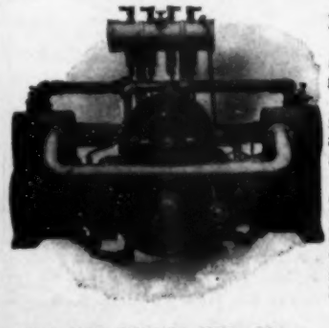
HALL OPPOSED MARINE ENGINE

Mr. Boatman——The HALL OPPOSED can be run on the governor or handled by throttle without changing adjustment.



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The engine is complete,—if anything is wrong we make good.

No vibration, smooth, steady running, working parts easily accessible but not exposed, absolutely reliable.

Four cycle, two and four cylinder opposed, from 3 to 50 H. P. Besides our marine lines, we build direct-connected electric lighting units, and engines for general power purposes.

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The Ideal Power Plant for Commercial Motor Boats

20-30 and 40 Horse Power Holliday Medium Heavy Duty—4 Cycle—Conservatively Rated—Economical Fuel Consumption—Full Rated Horse Power Developed at Nominal Speed

A Few Users: MERCHANTS LIGHTERAGE COMPANY, GREAT LAKES DOCK & DREDGE CO., SCULLY STEEL & IRON CO., CHICAGO POLICE DEPARTMENT, MACATAWA TRANSPORTATION COMPANY

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THE SILENT SIMPLIFIED ENGINE

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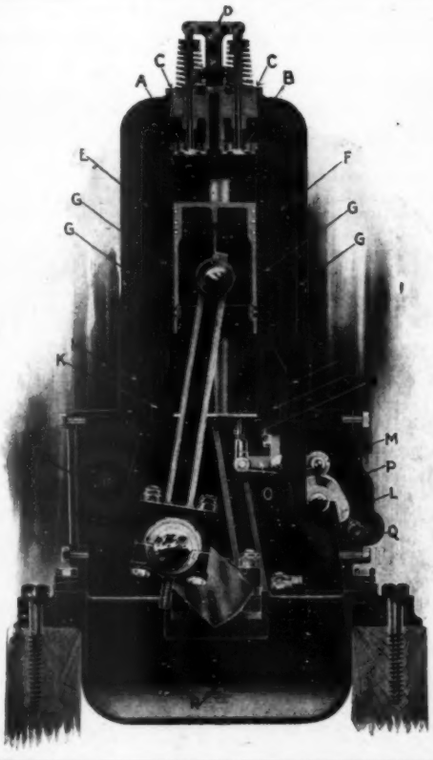
An Engine that represents the most advanced ideas in gas engine design

ABSOLUTELY the most simple four-cycle engine built.

A high-grade, medium weight, medium speed engine for cruising and commercial boats.

No outside piping; no troublesome oil feeds or oil pipes—the lubrication being accomplished with an automatic splash system. All valves set in cages in the head, and both valves are operated with a single cam and push rod, thereby reducing the noise and the number of moving parts to a minimum.



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LIGHT—

Glorious, brilliant light for the cabins—reliable, steady, always-there lights for the side rails, the bow, the stern, and the decks.

A dazzling, all-seeing white shaft of light for the searchlight—

All right under your thumb. Turn a switch and they are all there at your command.

That's what you can enjoy with one of these Dayton Launch Lighting Outfits in your boat this season.

Of course you *can* get along with stuffy, smelly oil lights that need refilling whenever you try to light them; that blow out and go out without warning—

But who wants oil lights when you can just as well have one of these electric lighting systems?

Our outfits are complete

A dynamo run by a belt from your engine.

Batteries charged by the dynamo, making a double and unfailing source of current.

Switchboard and meters complete the outfit.

Besides light, there's the feature of perfect ignition current to consider.

A constant source of current like this makes you rest easy on the ignition question.

The searchlight question is answered by our new 1500 candlepower arc outfit. We will inform you on this point if you desire it.

Write for our bulletin describing our lighting outfit, as well as our complete line of ignition apparatus

The Dayton Electrical Manufacturing Co.

Largest Manufacturers of Ignition and Lighting Apparatus Exclusively in the World

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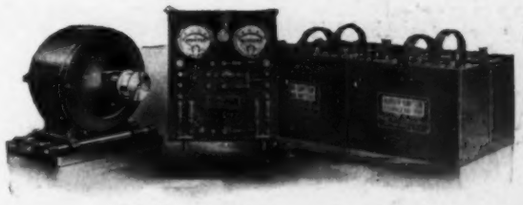

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now—get in shape to enjoy your boat to the fullest extent during the entire Summer.

You will appreciate the easy starting feature, the reliability and high power of our engine. Your little sister can start it easily without danger.

We have the right type of motor for your boat, ready to ship from any of our 36 branch houses. 3½ to 40 H. P. Write for Catalog No. 1315BG.

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Ideal for Pleasure or Business

Planked with best white cedar; copper fastened and riveted; high pier board; equipped to meet U. S. Government regulations. Money won't buy better materials or more skilled and careful workmanship than goes into these hulls. Equipped with

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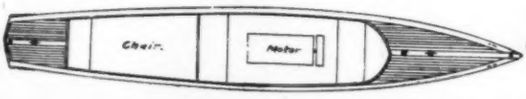
We believe that Ithaca Motors are as good motors as money will buy. Used in Ithaca Boats they complete an outfit that gives maximum efficiency and economy.

Champaign Bros.

810 BUFFALO STREET, ITHACA, N. Y.



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LEAD them all in Durability and Efficiency. Over 8000 users backing up their boats every day. No revolving parts to catch the clothes, bruise the hands and throw the grease about the boat. Everything inclosed in a stationary case and submerged in an oil bath.

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An invaluable book for the motor boat owner, covering the choice of a boat, the necessary equipment, the installation of motor, batteries and wiring, the operation of the motor, navigation rules and requirements, how to navigate, problems in navigation, examination for licenses, hints and helps, etc. It is carefully and extensively indexed to make it of value as a work of reference.

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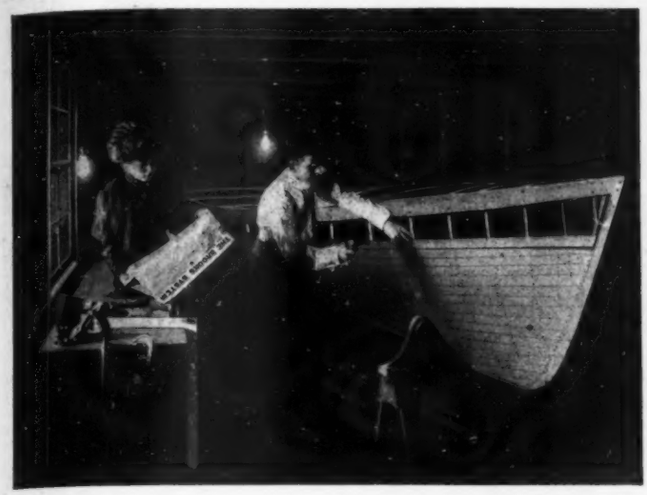

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Brooks Manufacturing Company

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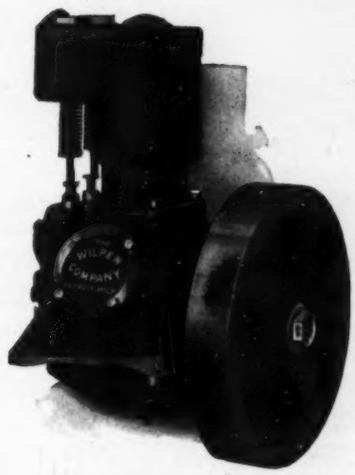

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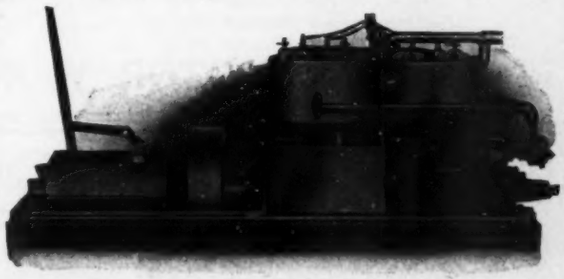
As little vibration as the ordinary two cylinder engine. Materials and workmanship just about as good as they can be.

For Reliability, Economy and Durability, it has no rival, and the price is reasonable.

Suitable for hulls from 16 to 25 ft. long.

Oakland 20-32

The RIGHT Motor



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Strongest Pulling Engine of its inches in the world

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If your boat is unsatisfactory, sell it and get the best—an Auto Craft. We guarantee Safety, Silence, Speed, Comfort, Durability and Satisfaction.

Let us send you our beautiful Boat Catalog containing an exceptionally wonderful photograph of Capt. Larsen shooting the Rapids of Niagara River in an Auto Craft Stock Boat. This catalog is fully illustrated and gives the specifications of the different Auto Craft Specials and our Gentleman's Auto Craft Runabout, a 25 ft. 11 H. P. Model selling at $775 complete.

18 Ft. Auto Craft Special, Only $200

This is a trim, fast, dry, safe and absolutely unsinkable Craft. Length 18 ft., beam 4 ft. 6 in. Seats eight persons. Speed 8 miles per hour. Equipped with Ferro 3 H. P. Engine. Has metal air chambers under fore and aft decks, like a life-boat. The best and fastest boat for its length and price ever produced. Other exceptional Auto Craft values are the 21½ ft. (4 H. P. Ferro and Reverse Gear) $300, and the 24 ft. (8 H. P. Ferro and Reverse Gear) $450.

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DEALERS IN ALL LARGE CITIES

THE CLEVELAND AUTO BOAT MFG. CO.

1037 River Ave. N. W., Cleveland, Ohio, U. S. A.

You Can't Afford to Injure Your Workmen!

Don't be fooled into buying paint remover containing carbolic acid or alkali. The acid and alkali attack the workmen and remain in the wood to spoil the new finish. No other removers are equal to the neutral—harmless—

PAINT AND VARNISH REMOVERS

[MANUFACTURED BY

	Address.	Brand.
Acme White Lead & Color Works	Detroit, Mich.	"Acme"
Adams & Elting Co.	Chicago, Ill.	"Ad-el-ite"
Albany Chemical Co.	Albany, N. Y.	"Albany Paint & Varnish Remover"
Arnstein, Inc., Eugene	Chicago, Ill.	"Blitz"
Ball Chemical Co.	Pittsburg, Pa.	"Ball's"
Berry Bros., Ltd.	Detroit, Mich.	"Apex"
Bird-Archer Co.	New York, N. Y.	"Empire"
Bird & Co., J. A. & W.	Boston, Mass.	"Mistic"
Boston Varnish Co.	Boston, Mass.	"Boston"
Boyle & Co., A. S.	Cincinnati, O.	"Var-ni-go"
Bradley & Vrooman Co.	Chicago, Ill.	"Crown"
Bridgeport Wood Finishing Co.	New Milford, Conn.	"Bridgeport"
Burbank & Ryder Varnish Co.	Boston, Mass.	"Bunker Hill"
Calman, Henry L., doing business as Emil Calman & Co.	New York, N. Y.	"Zymolite"
Campbell Glass & Paint Co.	St. Louis, Mo.	"Cleanoff"
Chalmers Chemical Co.	Dedham, Mass.	"Phenoid"
Chicago White Lead & Oil Co.	Chicago, Ill.	"Magic"
Crockett Co., The David B.	Bridgeport, Conn.	"E-Z"
De Ronde, Frank S.	New York, N. Y.	"De Ronde"
Detroit White Lead Works	Detroit, Mich.	"Ab-lu-ent"
Devoe & Raynolds	Chicago, Ill.	"Cauteria"
Devoe, F. W. & C. T. Raynolds Co.	New York, N. Y.	"Devoe"
Eberson Paint Co.	St. Louis, Mo.	"V. & P. Solvent"
Electro Manufacturing Co.	Detroit, Mich.	"Electro"
Enterprise Paint Mfg. Co.	Chicago, Ill.	"Noxal"
Flint Varnish Works	Flint, Mich.	"Re-mo-vit"
Fuller & Co., W. P.	San Francisco, Cal.	"Conqueror"
Gillespie & Sons, Chas. H.	Jersey City, N. J.	"Monarch Bull Dog"

You Can't Afford to Injure Future Coats of Finish!

	Address.	Brand.
Glidden Varnish Co.	Cleveland, O.	"Glidden's"
Gould & Cutler, Inc.	Boston, Mass.	"Eclipse"
Harrison Bros. & Co., Inc.	Philadelphia, Pa.	"Harrison's"
Heath & Milligan Mfg. Co.	Chicago, Ill.	"Wizard"
Ideal Mfg. Co.	Chicago, Ill.	"Ideal"
Indianapolis Paint & Color Co.	Indianapolis, Ind.	"Rapid"
Johnson & Son, S. C.	Racine, Wis.	"Johnson's Electric Solvo"
Keystone Varnish Co.	Brooklyn, N. Y.	"23-Skidoo"
Lawrence & Co., W. W.	Pittsburg, Pa.	"Klean-it"
Lincoln Paint & Color Co.	Lincoln, Neb.	"Lincoln"
Lucas & Co., John	Philadelphia, Pa.	"Mirac"
McPhee & McGinnity Co.	Denver, Colo.	"Magic Solvent"
Michigan Paint Co.	Flint, Mich.	"Se-tab"
Palmer-Price Co., The	Newark, N. J.	"Eureka"
Parrott Varnish Co., The	Bridgeport, Conn.	"Parrott"
Patterson-Sargent Co.	Cleveland, O.	"B. P. R."
Patton Paint Co.	Milwaukee, Wis.	"Patton's"
Peninsular Paint & Varnish Co., Ltd.	Detroit, Mich.	"Peninsular"
Perry-Austen Mfg. Co.	Grasmere, S. I., N. Y.	"Instint"
Pratt & Lambert, Inc.	Buffalo, N. Y.	"Expidite"
Prince Paint Co., Jas. H.	Boston, Mass.	"Zip"
Sherwin-Williams Co., The	Cleveland, O.	"Taxite"
Standard Varnish Works	New York, N. Y.	"Klenz"
Twin City Varnish Co.	St. Paul, Minn.	"Kum-Off"
U. S. Gutta Percha Paint Co.	Providence, R. I.	"Removall"
Wadsworth-Howland Co.	Chicago, Ill.	"Jewell"
Wadsworth-Howland & Co., Inc.	Boston, Mass.	"Magic"
Watson Co., Geo. E.	Chicago, Ill.	"Faultless"

See that every can is marked—"LICENSED UNDER U. S. PATENT NO. 714,880" AND OTHER PATENTS.

Sustained fifteen times by the United States Circuit Courts. Other suits pending. You take no risk when you buy one of the licensed brands of Remover. They are harmless and efficient. They contain no carbolic acid or alkali. They are neutral.

CHADELOID CHEMICAL COMPANY, No. 100 William Street, NEW YORK, N. Y.

"WOLVERINE" Kerosene—Gasoline

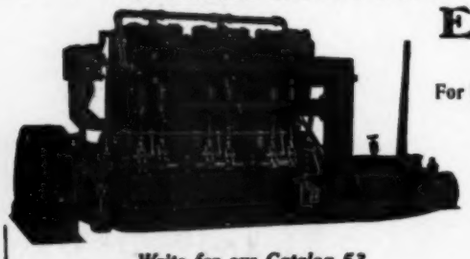
'The Motor With the Bore and Stroke'

MARINE ENGINES

4 Cycle. 5 to 100 H. P.

For Pleasure and Commercial Service

High Grade Machinery for Discriminating Buyers



There is a big advantage owning an engine adapted to a variety of fuels, because some are always readily procurable. "WOLVERINE" Engines are suitable for every class of service where reliability and economy are demanded.

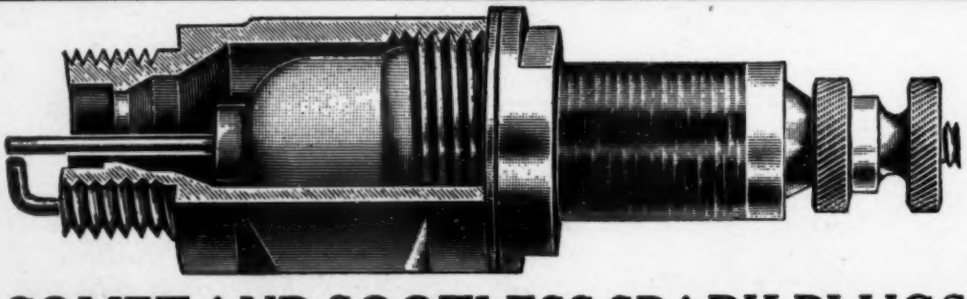
Write for our Catalog 53

Selling Agents Wanted

"Marie," 230 tons capacity, 120 feet long, of Antwerp, Belgium. A 36 H. P. Wolverine motor drives her at a speed of 7 miles an hour.

WOLVERINE MOTOR WORKS BRIDGEPORT, CONN., U.S.A.

COMET



SOOTLESS

COMET AND SOOTLESS SPARK PLUGS

MANUFACTURED BY

The Oakes & Dow Co., 15 Chardon St., Boston, Mass.

MULLINS
Steel Motor Boats

are puncture-proof. They have hulls of steel plates. *Can't sink* or leak like wooden kind. And though so superior, you'd be astounded at the low prices—at the value for the money. Just think! These boats *can't* warp, waterlog, crack, split, dry out or open at the seams. Can't be gnawed by worms.

Mullins boats have motors that are light, simple, powerful—and won't stall at any speed—*start like an auto*—have ONE MAN CONTROL and famous Mullins Silent Under Water Exhaust.

12 models—16 to 26ft., 3 to 30 Horsepower. Investigate.

11 ft. Dingy—$34

Complete Line of Row Boats and Duck Boats, $22 to $39

Handsomest Boat Book Ever Printed—FREE!

Most interesting book of its kind—profusely illustrated in colors—gives fullest details, views, prices, etc., of this noted Mullins line. You'll be delighted with it. Proves how superior Mullins Boats are to any old-fashioned wooden kind. Send for it to-day—NOW.

THE W. H. MULLINS CO., 182 Franklin St., Salem, Ohio.

"IS IT REALLY ACCURATE?"

"Yes, *sir*. The makers told me to try it and I would find it reliable, and it is.

"I depend upon it absolutely—now. It shows instantly when something is making me lose speed—I adjust my spark and carbureter by it and get all the speed the boat can give.

"You'd be surprised to see how quickly it records any little change—it's really the most valuable thing on the boat.

"You could put one on your boat in an hour—it's the simplest thing you ever saw—and notice how it's made—I don't see how they sell it for ten dollars. You certainly get your money's worth.

"Tell them how high above the water-line you will put it—that's all."

THE ROPER MARINE SPEEDOMETER

enables you to calculate the distance run in a given time—you can make intelligent headway in a fog or strange waters—you can tell how much your speed is affected by engine troubles, a foul bottom or wind and waves. Nothing else like it. Fully guaranteed.

Send for our new Catalogue 3, giving full information

C. F. ROPER & CO., HOPEDALE, MASS.

Makers of the famous Roper Safety Propeller

CIRCULATION GUARANTEE

OF

MOTOR BOATING

THE NATIONAL MAGAZINE OF MOTOR BOATING

FOR the complete information and protection of advertisers in MoToR BOATING and other manufacturers in the motor boat industry contemplating advertising in MoToR BOATING, we issue the following:

CIRCULATION GUARANTEE

That the circulation of MoToR BOATING is now, and will hereafter continue to be, in excess of 25,000 copies per issue.

That in the event of the circulation of any issue of MoToR BOATING, from any cause whatsoever, falling below 25,000 copies per issue, we agree to make a *pro rata* reduction in the advertising rates on that issue.

That the circulation books of MoToR BOATING are open to the examination of advertisers and prospective advertisers.

That even though the circulation of MoToR BOATING is in excess of 25,000, we will continue to put forth the same successful efforts which have raised MoToR BOATING in three years from a small circulation to one that, we believe, is the largest in the motor boat field.

With this guarantee before them all manufacturers in the motor boat industry are assured of at least one motor boat medium with a reader-reaching, result-producing circulation in excess of 25,000 per issue.

MoToR BOATING
George von Utassy,
Publisher

REYNOLDS

ROTARY VALVE MOTORS

HERE IS A QUESTION FOR YOU TO DECIDE

¶ Will you spend half (or more) of your good spare time this season in cranking and nursing along a baulky engine, *or* will you start up on two or three turns and have the satisfaction of listening to your motor purring along all day with never a miss?

AND HERE IS ANOTHER

¶ Will you be compelled to use a megaphone to scream a few necessary words into the ear of the guest sitting right next to you in your boat, *or* will you talk comfortably, in an ordinary tone of voice, whenever you happen to feel like it?

¶ Ten years ago, any man who went in for the sport of motor boating, had no choice but to put up with all sorts of uncertainties and annoyances in his motor, and a man can go out and buy pretty much the same troubles today—if he likes that sort of thing—but what's the use? It means a waste of good money and a boating season spoiled.

¶ In the light of the wonderful development and refinement that has taken place in the art of gas engine manufacture, you are entitled this year, and at a very moderate cost, to a great deal that, a few years ago, no amount of money could possibly have purchased. If the motor you buy now is not *smooth* and *quiet* in operation, *absolutely reliable* under all circumstances, *extremely simple* in construction and *entirely free from care* and *adjustments*, then you are falling short of what your money will actually purchase.

We are ready and waiting to tell you all about the

Reynolds Rotary Valve Four Cycle Marine Motor

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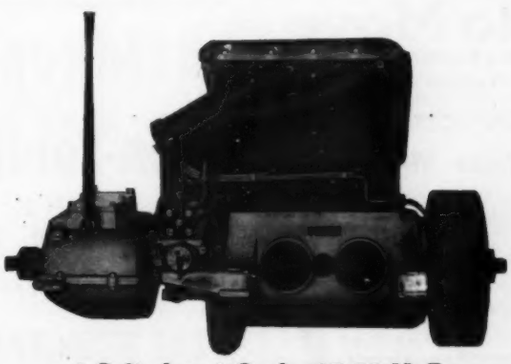
REYNOLDS MOTOR CO., No. 100 Hillger Ave., Detroit



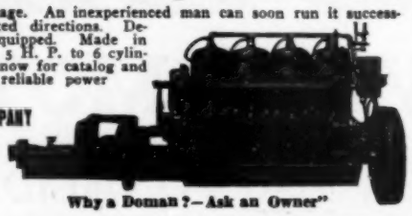
4 Cylinder, 4 Cycle, 15-20 H. P.

Power In Plenty-Here

When you need it most—"always on the job." Its strong, even stroke makes the Doman a favorite because you can trust it in fair weather and foul. A

DOMAN Medium Weight Marine Motor

is simple, easy-to-manage. An inexperienced man can soon run it successfully from our printed directions. Delivered completely equipped. Made in sizes from 2 cylinder 5 H. P. to 6 cylinder 75 H. P. Write now for catalog and learn all about this reliable power plant.



THE H. C. DOMAN COMPANY
Dept. C
Oshkosh, Wis.
U. S. A.

"Why a Doman?—Ask an Owner"

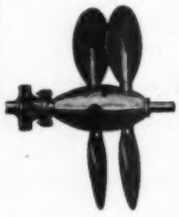
MARINE HARDWARE

EVERYTHING NEEDED
To Build or Equip Any Sort of Boat
TOOLS, FASTENINGS, PROPELLERS, SIGNALS, ANCHORS, PAINTS, Etc.
Send for illustrated catalog enclosing 2c. for mailing
A. S. MORSS CO. 222 Commercial St. BOSTON, MASS.

WE OFFER YOU IN THE ROPER SAFETY PROPELLER

an entirely new, different and effective principle of speed control. It is exclusive with us—this wonderful principle, and you will be a Roper enthusiast the day you become acquainted with our propeller. Don't listen to theories—get *facts*.

The Roper Safety Propeller gives you any speed, from absolute rest to full speed in either direction, on the instant, by the operation of one controlling lever, without affecting in any way the action, or requiring any adjustment of the engine.



Illustrated booklet on request

C. F. ROPER & CO.
5 Nothrop Street, Hopedale, Mass.

There's a Feeling of Safety

If you use the Cady Engine in your motor boat; a knowledge that the motive power is of the best and can be depended upon in time of distress.

IT'S NOT GUESS WORK

That makes the Cady go. Years of practical experience in building engines with a reputation of BEST, make "Cady" a name to be reckoned with in the Motor Boat Engine Field.

THE U. S. GOVERNMENT

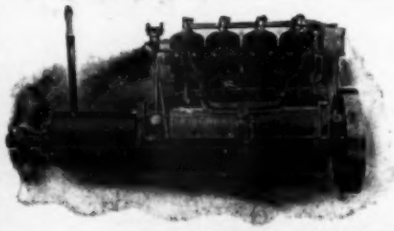
tried out Cady Engines in the Light House, Life Saving and Navy departments. That they placed orders for more is a guarantee in itself.

We will be pleased to send you free our latest catalog. You cannot afford to miss it if you are a motor boat owner or expecting to become one. It makes clear a few things you ought to know about motors and boats.

C. N. CADY CO.
303 West Center Street CANASTOTA - - N. Y.
NEW YORK CITY—Gasoline Engine Equipment Co.

Niagara the Motor of Quality

4 Cycle in 2, 4 and 6 Cylinders, 5 to 90 Horsepower
FOR CRUISING, RACING, FISHING, FREIGHTING



Always in Advance

Never Disappoints

Send for Catalog and Book of Evidence
NIAGARA GASOLINE MOTOR COMPANY
194-200 Breckenridge Street, Buffalo, N. Y.

"THE REX" AUTOMATIC ANCHOR

HAND FORGED

We will forfeit $100 if this anchor will not hold 20% more strain than any anchor on the market of same weight and in any kind of bottom. We have proved this many times. "An anchor that holds in a blow" is your "right bower." Write for testimonials.

To introduce these anchors, we are offering them at the price of common anchors. **8 Cents Per Pound.** 25 lbs. & upward

WALTER COLEMAN & SONS 300-312 SOUTH WATER ST. PROVIDENCE, RHODE ISLAND
FOUNDED 1778 *INCORPORATED 1911*
MARINE OUTFITTERS
CIRCULARS ON APPLICATION

"If You Want to Move

When You Throw On the Switch, Install a Red Wing"

is the advice of one of our customers to everyone owning or about to purchase a motor boat. If you want a motor that "is very simple to control," "works like a charm," "runs fast on very little oil and always runs," "runs very smooth" (a few quotations from the hundreds of letters on file), in short a trouble-proof engine—investigate the

Red Wing Standard 2 Cycle Motor

shown here. It is made with 1, 2 and 3 cylinders—3 to 15 H. P. Other Red Wings, including motors for high speed work and motors up to 80 H. P., and also the classy up-to-date reliable Red Wing motor boats (equipped with Red Wing Motors) are fully described in the beautiful **Red Wing Free Motor Boat Book.** Don't buy a motor or motor boat anywhere until you get this book and read the information on page 29. It's important to motor boat enthusiasts. Write to Dept. C 2.

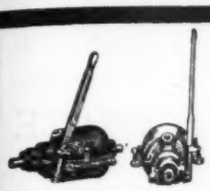
RED WING MOTOR CO., Red Wing, Minn.

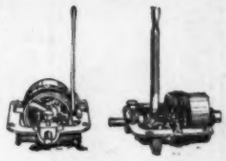
Bridgeport Standard (MITCHELL'S) Non-Fouling Enamel Paint

THE BEST PAINT FOR BOAT BOTTOMS

Write for booklet giving further details

THE BRIDGEPORT WOOD FINISHING CO.
NEW MILFORD, CONN.
NEW YORK CHICAGO BOSTON





HURRY UP!

Don't wait until the last minute to order your new speed wheel, reverse gear and marine hardware; now is the time to order before the rush season, and don't order until you receive our 1911 catalog.

EVERYTHING

For motor boats is our specialty. Our prices are right; the goods the best. We are the largest manufacturers in the world and supply over half the engine and boat builders. Why not you? You want the best there is.

SPECIFY THE MICHIGAN

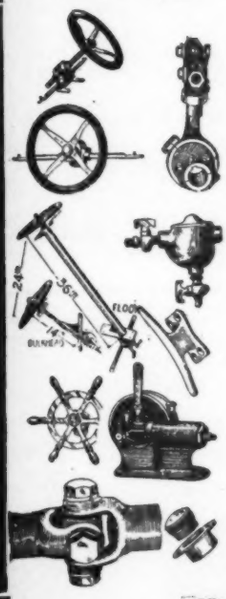
Speed wheels, reverse gears and marine hardware for your new outfit and have the fastest boat and the latest up-to-date line of goods; it pays. Every dealer, engine and boat builder will be more than pleased to furnish you our line of goods, as they well know the good results.

LOOK OVER THIS AD

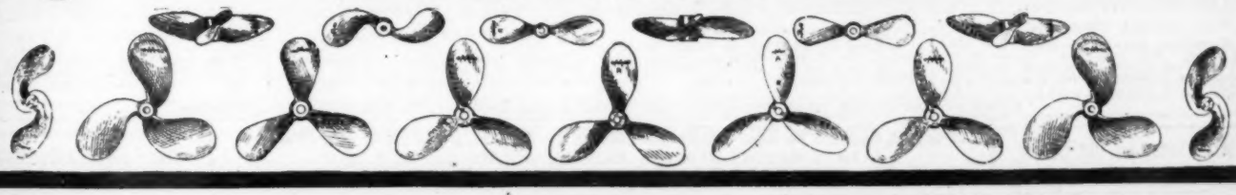
There is something you need in our line. Keep up to date. Every year we get up a new line, make big improvements and drop antiquities.

Send for 1911 Catalog To-day

A postal, a letter, brings it to you free, and will tell you more about our goods.

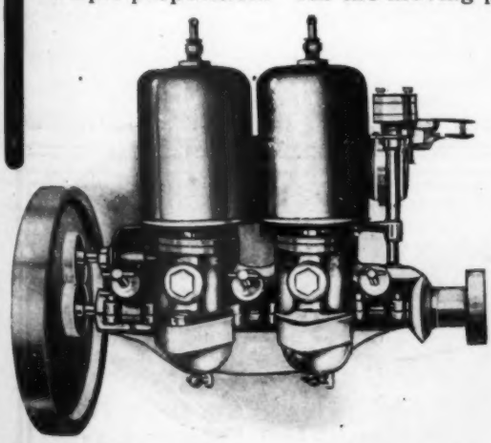


Michigan Wheel Company
556 Canal Street, Grand Rapids, Mich., U. S. A.
Eastern Branch, 4 Dey Street, New York City

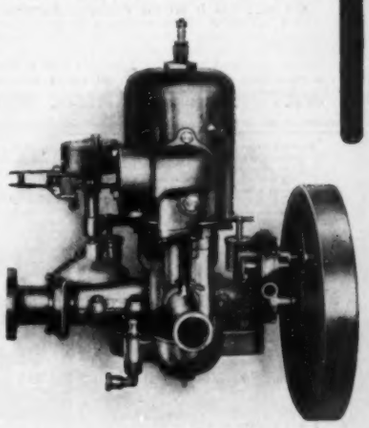


Small Engines Also

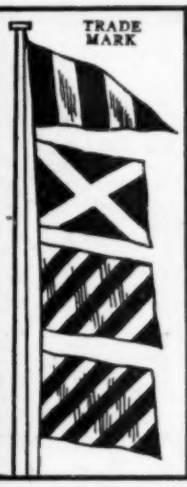
JUST because you have a small boat is no reason why you can not have a Pierce-Budd engine. We make the small sizes as well as the big racers, and if you have not yet secured our free engine book, it will certainly pay you to let us send it at once. Our engine is a very fine, well made, reliable and simple proposition. All the moving parts are encased and protected. The ignition system is the best to be had. The carburetor is especially designed and you will find this engine to be very much "fool-proof."



We would like to impress upon you the value of a good engine in your boat and can show you why in the end our engine will prove less expensive than some others. We have some good agency territory still open, (not very much, but a little), possibly you are writing from this very territory and we will be pleased to make you a demonstrating proposition on a sample engine for use locally. We offer good protection to our agents; take care of our customers and are daily proving to many satisfied users that our Bay City factory is the home of ONE GOOD RELIABLE ENGINE.



Pierce-Budd Company **Dept. C, Bay City Michigan, U. S. A.**



Paint the bottom of a Deep Sea Cruising Yacht or a Fast Racing Launch with

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MARBLEHEAD ANTI-FOULING GREEN OR WHITE

SMOOTH—DURABLE—SLIPPERY—HANDSOME

It is the most powerful preventive of marine growth, barnacles, and borers produced. Keeps the bottom of a cruising yacht absolutely clean, and is superior to pot lead for a racing finish.

The American Yacht Cima was refinished with this composition for the Spanish races, Doris, Cone, Constellation, Rory, Gloriana, Ranger, Adventuress, Shiyessa (Bermuda Race), Idaho (Bermuda Race), Dervish (winner Bermuda Race), Wag (Sonder Klasse), Skeezix (Sonder Klasse), and a thousand others all used it.

FOR WOOD OR STEEL
It is
NOT a Copper Paint
and
IS Non-Corrosive.

ABSOLUTELY GUARANTEED.

FOR TROPICAL WATERS it is the only substitute for copper sheathing as a protection against Teredos.

STEARNS-McKAY MFG. CO. MARBLEHEAD, MASS. U. S. A.

CABIN CRUISERS
Exceptional offers in the cruiser line, 28-ft., 36-ft., 38-ft. and 41-ft. Raised Deck Type. These cruisers are equipped complete, ready for cruising at an extremely low price.

OPEN MOTOR BOATS
Bargains in all kinds of Family motor boats, shallow draft boats and runabouts. These boats are the very best the market affords and reasonable in price.

SPEED BOATS
Different types of speed and semi-speed boats are kept in stock. We can build you anything in the speed line desired.

COMMERCIAL BOATS
Tugs, Fish Boats, Small Passenger Craft or any special design of boat can be furnished. Let us figure on your new outfit.

YEARS OF EXPERIENCE HAVE TAUGHT US HOW TO BUILD AND EQUIP BOATS FOR EVERY REQUIREMENT

Write Today for Our Catalog

RACINE BOAT COMPANY
1615 RACINE STREET, RACINE, WISCONSIN U. S. A.
CHICAGO SHOW ROOM - 1508 MICHIGAN AVENUE

Write Today for Our Catalog

WATERMAN SPEED CANOES

The Very Latest and Most Approved Construction of the Popular Speed Canoe

$550 Equipped with Waterman B-2 motor. Two cylinders, 12 horse power.

$750 Equipped with Waterman B-4 motor; 4 cylinders, 24 horse power.

Here is the ideal speed canoe; safe and seaworthy; guaranteed speed of more than 20 miles per hour; motor warranted for life, prices within reach of all

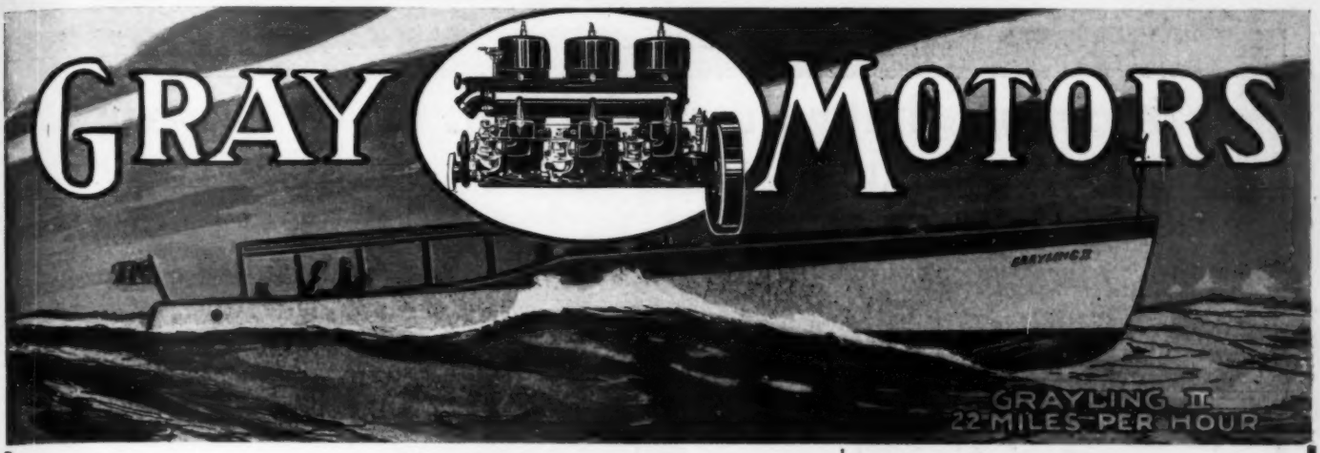
Here is one of the fastest speed boats on the water; plenty of speed; plenty of comfort and absolutely reliable under all conditions. Here is an ideal racing yacht tender; light in weight; sturdy in construction.

Not only has it all the desirable features of a satisfactory speed canoe, but it is also a beautiful craft; trimmed in mahogany. Never before was such a remarkable speed boat value ever offered. This same style of Waterman Speed Canoe has proved its absolute supremacy in its class by repeatedly defeating larger and much higher powered boats. When you buy a Waterman Speed Canoe you are purchasing a sure winner; a boat that can easily trim anything in its class. The canoe is built by America's most successful canoe builders; boat is 20 feet long; 3½ feet beam; built along most approved speed lines. Trimmed and finished to order if desired. You cannot duplicate our speed canoes at double our prices. We are equipping the Waterman Speed Canoe with the Waterman B-2 and B-4 special speed motors. Get all the facts about the Waterman power canoes. Get our catalog fully describing these remarkable speed canoes; sold at such remarkably low prices. Write for further literature today.

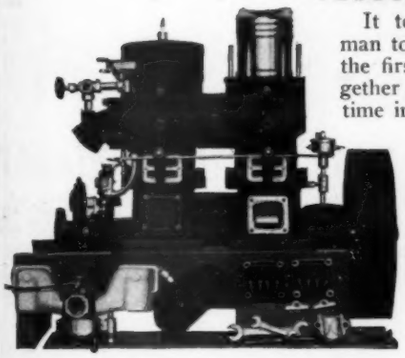
Get our new catalog immediately.

Motors with a Life Guarantee.

WATERMAN MARINE MOTOR COMPANY, 1531 Fort Street, West, DETROIT, MICHIGAN



Accessibility of Model "T"



It took 14 minutes for an inexperienced man to disassemble the motor as you see it—the first time—it took less time to put it together again. He said he could do it a second time in 10 minutes.

Removable cylinder heads. (The most accessible engine built.)

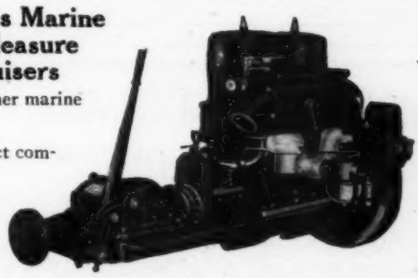
Cylinder can be removed without interfering with the bearings, exhaust manifold, gasoline or exhaust piping.

Pistons can be removed without removing the cylinder, simply take off cylinder head and remove two large hand hole plates on the side.

YOU KNOW what accessibility means in a boat.

That's only one of the features of a Gray Model T. **1, 2 and 3 Cylinders, 7 to 36 H.P**

Gray Model "T"—A High Class Marine Motor for Speed Boats, Pleasure Boats, Work Boats and Cruisers



More features of **real value** than any other marine motor in the world.

Operates on gasoline or kerosene fuel.

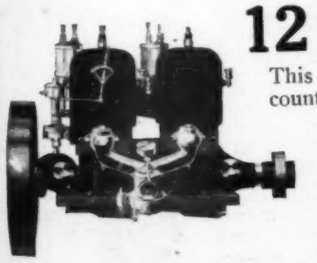
Combination two and three port. Perfect compression—starts on spark.

Made in 1, 2 and 3 cylinder sizes—7 H. P. and upwards. Ask for figures on 36, 72 and 108 horsepower plants.

Equipped with **Bosch** high tension magneto.

No water pipes exposed.

Lubricates through gasoline.



12 H.P. complete outfit, all ready to install in boat **$188.00**

This 2 cylinder motor is a remarkable engine on account of the power it will develop. They always develop much more than the rating calls for. It's this reserve power that wins races. In a Test by the Massachusetts Institute of Technology, one of these 12 H. P. motors developed 17½ H. P. Their smooth running qualities make them the choice of the man who wants an engine for a pleasure boat and their excess power developed is their best recommendation for speed boats.

3 H. P. complete outfit guaranteed to develop 4 H. P..... **$60**

The same workmanship, the same quality and material—the same strong guarantee as our $528 motor. The broad experience—the splendid equipment and absolute guarantee behind the Gray Motor—insure you a satisfactory motor and real motor satisfaction.

6 H. P. complete outfit guaranteed to develop 7 H. P..... **$89.50**

Electric Light Outfits

For Yachts and Private Houses Small Factories and Stores.

Close connected Engine and Generator mounted on single base.

How To Select a Marine Motor

First write for our big marine catalog, the largest and most complete gas engine catalog ever published.

Gives details and information you should know.

Tells the truth, and a lot of it, about Gray Motors.

You will know exactly what to expect and get if you decide on a Gray.

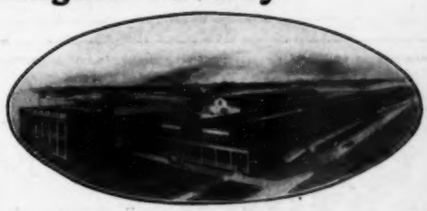
Will give you a lot of general motor information.

It's a real education in marine motors—their construction, use and design.

It will tell you where you can see the latest type of a Gray Motor in use.

But better still it will carry our urgent invitation to visit our big plant—where you can see the care we take in manufacturing, testing and shipping, and care of our motors after they are sold.

A Wonderful Marine Engine Factory



Detroit has become the recognized center of the gasoline automobile engine industry. Here are located many small marine and stationary engine builders and notably the largest business of its kind in the world, the Gray Motor Company—known wherever the motor boat enthusiast discusses the merits of gas engines.

There are more gasoline motor experts and high grade gas engine mechanics in Detroit than any other place in the world. Here are located the largest automobile plants in the entire world.

For years the Gray Motor Company has had the largest factory in the world devoted exclusively to the manufacture of two-cycle marine gasoline engines, and it has recently moved into a still larger factory building 150 feet wide x 1040 feet in length.

Every important part of Gray Motors is made in our big factory, so that we are able from our own knowledge of the selections of materials and careful machining of every part, to guarantee each engine in the broadest possible manner.

No marine gas engine business in the world has grown like this—the heads of departments have developed with the business, and they are in sympathy with both the welfare of their concern and the needs and demands of their customers. They watch the details, and this attention to detail has produced the largest marine gasoline engine output in the world.

Gray Farm-Pumping and General Power Motors

6 H. P. Farm Engine $94 to $124 complete.

3 H. P. Farm and Stationary Engine, $65, guaranteed to develop 4 H. P.

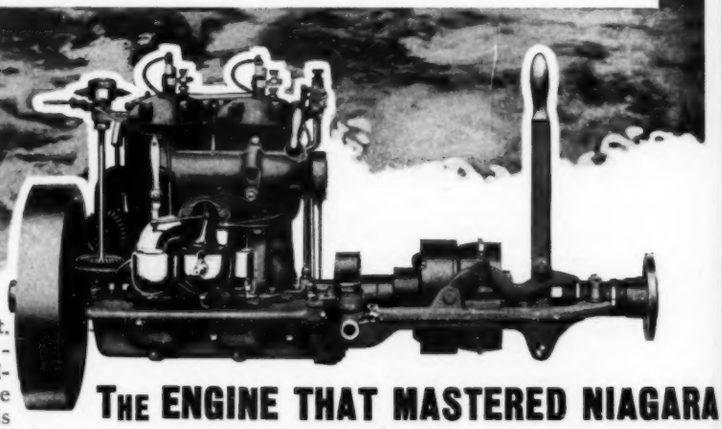
24 H. P. Irrigation. Pumping Engine $346—36 H. P. for $560.

GRAY MOTOR CO., 622 Woodward Ave., Detroit, Mich.

Canadian Gray Motors Ltd., 622 River Front St., Walkerville, Ont.

An engine that will stand the strain of Niagara can be depended upon to stand the hardest usage you can give it in everyday service.

FERRO



When Capt. Larsen navigated the Niagara Whirlpool Rapids, Sept. 18th last, he staked his life on the Ferro Motor. Although his boat was terrifically buffeted around, twisted and strained, the little stock model 8 H.P. Ferro enabled him to overcome conditions thought scarcely possible to surmount with even a 200-H.P. motor.

A test like this is the strongest endorsement of the engine's everyday efficiency and reliability.

THE ENGINE THAT MASTERED NIAGARA

Read more about this trip in our new interesting book, "Ferro Experiences from the Waters of the World." Just off the press. Illustrated with photographs. The book also contains many other interesting experiences of Ferro owners in all corners of the Earth. You ought to have a copy whether interested in buying an engine now or not. Send for it TODAY.

THE FERRO MACHINE & FOUNDRY CO. LARGEST MARINE ENGINE BUILDERS IN THE WORLD Main Offices and Plant: 36 Hubbard Ave., Cleveland, Ohio Eastern Salesrooms: Hudson Trml. Bldgs., 30 Church St., N. Y. City

Franklin was a discoverer.
Edison is a wizard.

Schug is a manufacturer of **Coils, Batteries** and **Electric Lighting Outfits** who has gained by others' experience, and by concentration and expansion of his **electrical** mind has accomplished how to **light a Motor Boat brilliantly,** economically and safely **"THREE MINDS IN ONE"** have accomplished these wonderful results that are especially of benefit to Motor Boats from the largest Cruiser to the smallest Runabout.

Schug lighting outfit equipped with automatic cut-outs

Have You a Cruiser?
Have You a Runabout?

if so **Schug** will gladly give you full information for the asking—information imparted **gratis** from a mountain of electrical knowledge.

WRITE NOW IF YOU ARE A
"1911 Lighting Bug"

Handsomely illustrated catalog goes with knowledge.

This coil is very economical in current consumption. Has High Speed Vibrator, Long Life and enormous efficiency.

DEALERS—May find some territory still open.

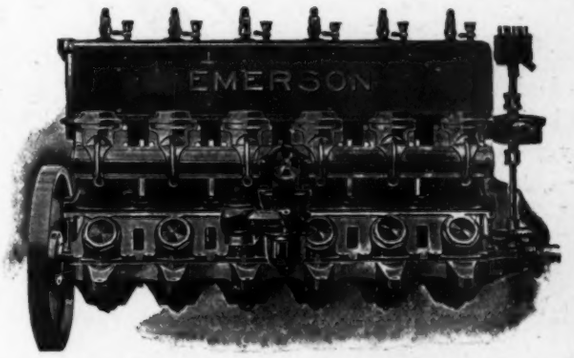
WRITE AT ONCE

SCHUG'S Electric Lighting Fluid keeps afloat many Motor Boats

SCHUG ELECTRIC MFG. CO., 321 E. Jefferson Ave., **DETROIT, MICH.**

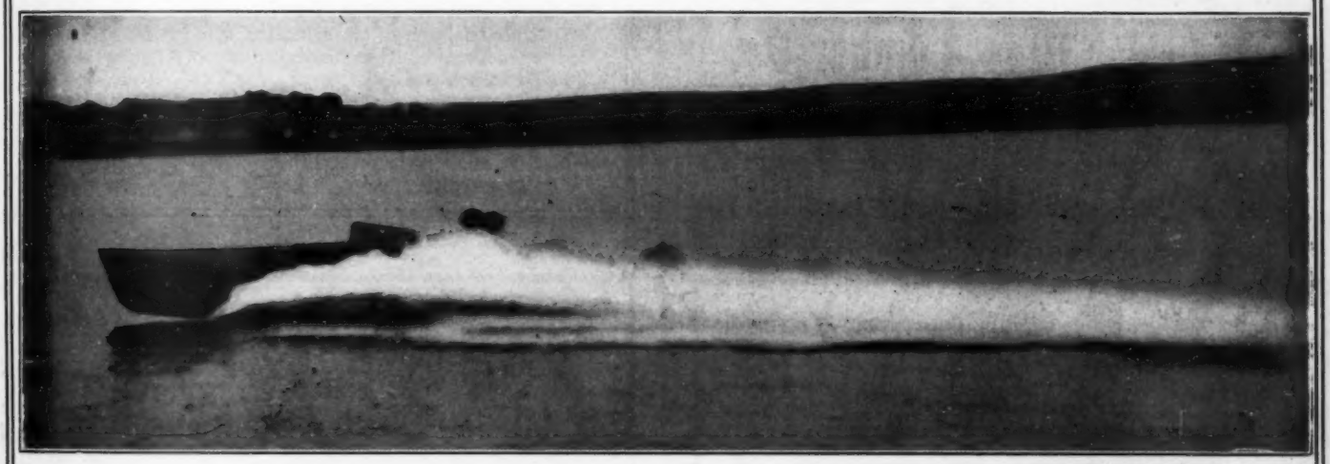
World's Records and Performances of the EMERSON ENGINES

THESE engines are built by workmen most of whom were selected from the United States Gun Factory at Washington, with special machinery that insures a great accuracy; steels of exceptionally high tensile strength and toughness are employed wherever possible, even the fly-wheel centers are of high carbon saw-plate ground and oil-tempered to insure great strength and lightness. The crank-shaft has over thirty inches of bearing surface to insure against frequent adjustment. The engine is practically finished all over, the composition base is scraped all over and the copper jackets, manifolds and inspection plates highly polished, making the most attractive engine ever constructed. Our exceptional facilities enable us to give the quality and power at the right price while our design provides for eliminating the unnecessary weights of cast iron, heretofore necessary in engine construction. With this engine a light weight boat can be constructed that is seaworthy and with a surplus strength to carry the motor, at from $200 to $400 that will, with a certainty, far surpass in speed and comfort any boat carrying a heavy motor with a necessarily proportionately heavy boat regardless of power or cost. With our engine, the moving parts being light and strong, eliminates the disagreeable vibration produced by heavy motors. The following results show that no engine of any make has ever before been able to produce such marvelous speed and endurance as the "Emerson" and, in ten days' racing, in competition with the fastest boats in existence, has won more important races, carrying with them cash prizes and valuable trophies, than all the rest of the various makes of engines combined.



Emerson Six Cylinder Racing Engine

100-125 H. P. Weight 300 pounds



"Emerson" World's Twenty-six-foot Champion, 36.1 Miles per Hour at Washington, D. C., August 20, 1910.

Winner 26-foot free-for-all championship Western Power Boat Association.
Winner 32-foot free-for-all championship Western Power Boat Association.
Winner 40-foot free-for-all championship Western Power Boat Association.
Winner Blue Pennant given by "Motor Boat" for Western Speed Championship.
Winner Carpenter Cup representing Speed Championship, Hudson River Yacht Racing Association.
Winner Lukenheimer Trophy, Ohio Valley Carnival.
Winner Corinthian Yacht Club Trophy, Speed Championship, Potomac River.
Winner Marshall Hall Trophy for speed championship.

Holder of World's Record for 26-foot displacement boats in competition surpassing in speed the records of such well-known boats as Independence, champion of W. P. B. A., 1908; Hoosier Boy, champion W. P. B. A., 1909; Red Top II, champion of Mississippi Valley 1910; Scripps, Mascot, Comet, Disturber, M. V. II, Syracuse, Eldredge V, Gun Fire II, Elmer L., or any other boat that has ever raced on the courses of the Mississippi Valley, Western Power Boat or Hudson River Yacht Racing Associations many of which were equipped with engines of from two to six times the cylinder area of the Emerson's engine. In all of her races this boat has carried two heavy men, weighing over 185 pounds each, and her hull is substantial, strong and seaworthy, weighing over 600 pounds and is not a racing freak. The above performances have been made possible by our new four-port system, 300 pound engine, far surpassing any motor ever built for workmanship, finish, design, or power to pounds of engine weight.

Write for Catalog to-day

Manufactured by the

EMERSON ENGINE COMPANY (Inc.)

ALEXANDRIA, VA., U. S. A.

NEW YORK OFFICE: 1737 BROADWAY

CEDAR MOORING BUOYS

The Jordan Bros. "Never-Sink" Cedar Mooring Buoy never sinks and lasts a lifetime.

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NEVER SINKS
LASTS A LIFETIME

PRICE LIST

5 Foot	Buoy	$15.00
7 "	"	16.00
10 "	"	18.00
12 "	"	20.00

Delivered at any railroad station in the United States on receipt of price

Jordan Bros. Lumber Co.
NORFOLK, VA., U. S. A.
SOLE MANUFACTURERS AND PATENTEES

We Ship CEDAR BOAT LUMBER Anywhere

Judge an Engine and Boat By Its History

Don't buy an engine or a boat on promises.

Don't listen to talk about what the engine will do. Find out what it has done.

Compare the actual History of the engine and boat you thought best with that of the

ROCHESTER

ENGINE AND BOATS

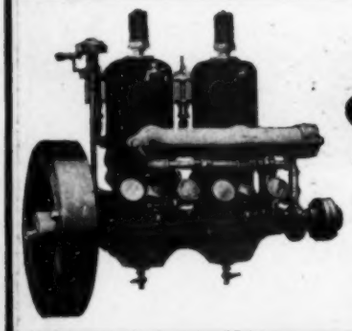
Find (if you can) an engine of corresponding price whose record can equal the Rochester's.

For 12 years in every contest this engine has entered it has proved its surprising quality.

"She seems to be proof against trouble." That's what one racing owner says. You can't afford a faulty, "fussy" engine. It spoils all the fun. Don't make a mistake. Find out all about the Rochester engines and boats. Send for details and catalogue. Send *to-day*.

1910 Models, one to six cylinders, 4 to 48 H. P. Immediate deliveries. Mechanical oilers. Atwater Kent Ignition. Gasolene or kerosene.

ROCHESTER GAS ENGINE CO.,
106 Platt St. and Brown's Race
ROCHESTER, N. Y.
New York Agent.
928 Broadway,
N. Y. CITY.



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"Nothing Cheap But the Price"

Two-cycle, two-port 3½ x 3½" and 4½ x 4½" drop-forged shafts and connecting rods. All bearings of nickel Babbitt and adjustable. Die-cast interchangeable connecting-rod bearings. Bronze plunger pumps. All engines reversible. Semi-steel cylinders. Many other features, all described in Catalog "S." Send today. Note these prices:

3 H.P. 1 Cyl.	$ 65.00
6 H.P. 2 Cyl.	125.00
6 H.P. 1 Cyl.	84.00
12 H.P. 2 Cyl.	155.00
18 H.P. 3 Cyl.	250.00

Including Schebler Carbureters and complete engine and electrical equipment.

UNIVERSAL MACHINE COMPANY
1609 Hicks Street Toledo, Ohio
New York Agents: E. J. WILLIS CO.

White Roses and Red

is a singularly pleasing tale of a convent-bred young girl—and the older society man "who did everything right." In it

David Graham Phillips

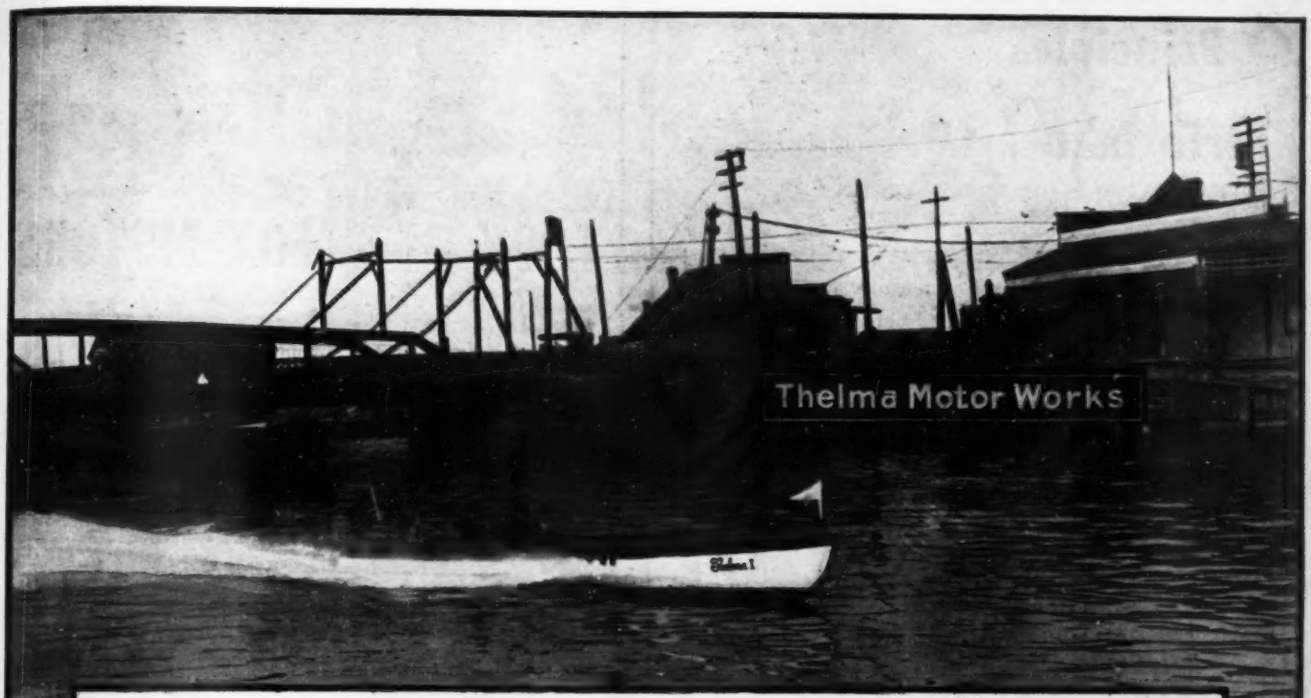
portrays the vortex of society, vividly and with real understanding. The charm of the story—and it is perhaps the best thing Mr. Phillips has written—is emphasized by the striking illustrations by

Charles Dana Gibson

This is but one of the features of the June GOOD HOUSEKEEPING. It is our Recreation Number, and in addition to its fiction and regular household departments, it is rich in summer ideas and vacation plans.

JUNE
GOOD HOUSEKEEPING MAGAZINE
381 FOURTH AVE. NEW YORK CITY

At the newsstand 15 cents per copy
By mail $1.25 per year

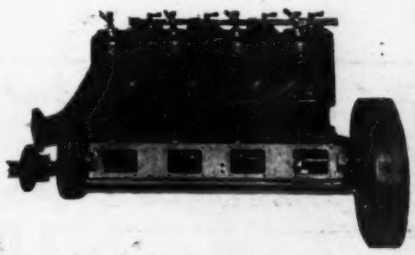


Stop!

Look!

Read!

and think the matter over. Can you afford to put a poor engine in your boat? Can you afford to invest in a splendid, well built hull and equip it with a small, under-powered, un-reliable engine? Can you spare the time from your business or pleasure journey to tinker up a faulty machine? Weak spots in an engine are dangerous and expensive. Men are today paying more attention to the quality of workmanship **under the paint** than they are paying to fine finish. The good old reliable **THELMA Engine** offers excellent material and workmanship with handsome finish as well. Agents and demonstrators will find that there is more profit in the sale of a fine engine like this than there is in junk. Perhaps the very territory in which you are located is open for an agency. Perhaps we can make an arrangement whereby you can secure one of our very fine demonstrating, racing engines, so folks can see what these engines really do.



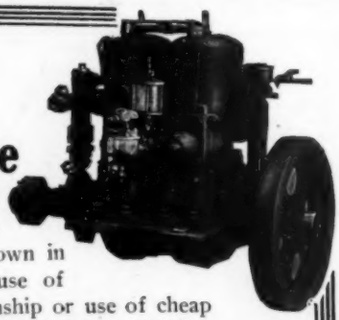
at the sturdy lines and pleasing appearance of this machine of quality. Look at the ease with which working parts can be examined or adjusted. Look at the marvelous efficiency of carbureter, timer, and all equipment. Look at the satisfaction these engines have given to boat owners all over the Great Lakes. Look at the trophies **THELMA Engines** have won. Look at the reputation these sturdy machines have everywhere. Don't you think it would pay you to investigate the fine proposition we offer live, active, **real** men who have sales ability and some slight knowledge of machinery. This is the opportunity of a lifetime to get connected with a growing concern. Perhaps it may mean profit, pleasure and business for yourself. If you are a local boat builder or an engine agent, our proposition will be particularly interesting.

every word of our handsome engine descriptive booklet, which we will send you free if you write us immediately. This catalog has snappy illustrations of speed boats, trophies, and gives vital facts about this most reliable engine. We build engines suitable for cruisers, ferries, working boats, fishing boats, speed boats and large pleasure launches. No matter what kind of engine you expect to buy, let us tell you about the **THELMA.**

Thelma Motor Works, 270 Junction Ave., Detroit, Mich.

Thelma Motor Works

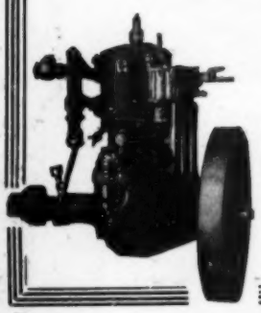
Principle *vs.* Performance



An engine may be designed according to correct principles yet fall down in actual performance because of faulty, unskilled workmanship or use of cheap material. Quality is not sacrificed to price in

T&M MARINE ENGINES

Don't buy an engine simply because it "looks good to you." Find out how it acts under all conditions. Ask yourself every question about the T. & M. Put it to every test—examine its records and you'll admit its superiority.



T. & M. Engines are made in every type and size for craft up to 65 ft. 2 H.P. and up; light, medium and heavy duty.

Write for catalog and name of nearest dealer.

TERMAAT & MONAHAN CO.
Dept."C," Oshkosh, Wis.

Agencies in all principal cities.
New York Sales Office 137 Liberty St.
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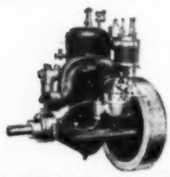
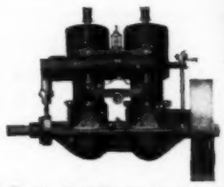


3½ H. P. Fox Special



14 H. P. Fox Heavy Duty Motor

LOOK at these illustrations of FOX MOTORS

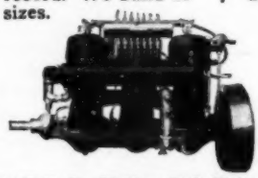
The 3½ H. P. is suitable for boats under 22 ft. long, and any time within 90 days after purchasing we will allow you full price paid in exchange if you want more power.

The 14 H. P. is the motor a fisherman needs either in the single cylinder size or larger. It is built for commercial boats of all classes.

The 21 H. P. shows only one of 9 sizes equipped with the famous **Fox Fourth Port**—"the fuel saver."

The 24 to 36 H. P. Fox de Luxe gives maximum power for minimum weight. Six sizes with the **Fox Fourth Port.**

Fox Motors hold the world's endurance record. We build 22 sizes. | Write for CATALOG and Prices. | All Fox Motors are sold on a money-back Guarantee.



21 H. P. Fox Medium Duty Motor

24 H. P. Fox De Luxe

THE DEAN MANUFACTURING CO.
221 FRONT ST., NEWPORT, KY.

HARDWARE FOR WET PLACES

Always Something New

Durkee's Patent Inlet and Strainer

Pat. allowed for U. S. and Canada.

Headquarters for Spray Hoods, Canopy and Auto-Boat Tops, Life Preserver cushions, Pneumatic and Cork cushions, etc.

Our 500-page Catalog sent on receipt of 20c to cover postage.

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TWO SOUTH STREET
NEW YORK

"PYRENE" PUTS OUT ANY KIND OF FIRE

"WARNING."

All persons are hereby warned against making, selling or using, liquid fire extinguishers, of the syringe type, or fire extinguishing solutions which are broadly covered by U. S. Patents Nos. 866437, September 23d, 1907; 915917, March 23d, 1909; 954398, April 5th, 1910; and other patent applications; also patents issued and pending in all the principal foreign countries.

NOTICE.

Suit for infringement of our patent rights has been brought against J. W. Durkee and C. D Durkee & Co., and we propose to take further steps to protect our patent rights everywhere, both as to users and sellers.

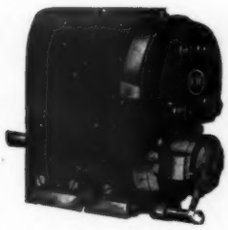
Pyrene Mfg. Co.
410 East 32nd St., New York City

HIGH TENSION MAGNETOS

WON EVERY RACE ENTERED AT PALM BEACH RACES, 1911

Give Absolute Synchronism and Perfect Results at All Speeds

NO Coil · **NO Timer** · **NO Batteries**



MODEL J

for engines up to 30 H.P. that can be cranked easily.

1 cyl. $40.00
2, 3, 4 cyl. 50.00
6 cyl. 55.00

MODEL H 4-MAGNET

for engines up to 40 H.P.

2, 3, 4-cylinder $75.00
6-cylinder 85.00
8-cylinder 95.00

MODEL H T 5-MAGNET

for largest engines made.

2, 3, 4-cylinder ..... $ 85.00
6-cylinder 95.00
8-cylinder 105.00

The Model H T is the most powerful magneto made. It is the one used as standard equipment by several large stationary engine builders, and starts large 400-H.P., 150-pound compression engines with less than half the compressed air it takes to start on batteries—no other Magneto is strong enough to start on its own power, but requires batteries. The largest marine engine is a mere pigmy compared to this large engine, thus demonstrating the hot K-W spark and ease of starting.

The K-W Spark Coil

gives the hottest possible spark on smallest possible battery consumption; has large, 25 per cent. platino iridium contact points that do not freeze together and its windings are GUARANTEED FOREVER against breakdown. They don't cost YOU any more than the other kind. Write for coil folder today.

MODEL M

Single Cylinder Coil, Mahogany finish, Model M..... $6.00

Single Oak Coil with Cover,, Model O..... 7.00

WRITE FOR OTHER PRICES

MODEL O

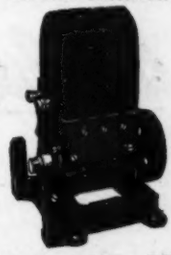
Electric Search Lights

In addition to running Ignition, K-W Low Tension Magnetos will run a 25-candlepower Tungsten bulb.

Complete Searchlight outfit, Magneto, Deck-Control Searchlight, switch, wire and bulb, $50. Searchlight only, $15.00.

If you cannot gear drive a High Tension Magneto use one of our $35.00 Low Tension belt or friction drive Magnetos, and a K-W Spark Coil.

Guaranteed to start the engine without batteries.



THE K-W LOW TENSION MAGNETO, $35.

Belt or Friction-Drive. Used with K-W Coils. NO Moving Wires. NO Brushes. NO Commutators. Runs in ball bearings.

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THE K-W IGNITION Co.

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We Prepay the Express East of the Mississippi or to the Mississippi on points beyond, when cash accompanies the order

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Boston—W. J. Forbes, 70 Long Wharf.
Philadelphia—Vail-Schaefer Co., 608 Arch St.
Syracuse—Syracuse Rubber Co.
Cincinnati—L. E. Bedinger, 217 East Third St.
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Los Angeles—Weinstock-Nichols Co., 1216 S. Olive St.
Washington—Miller-Dudley Co., 735 13th St., N. W.
Portland, Ore.—Rober Machinery Co., 281 E. Morrison St.
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Kansas City—Kansas City Auto Supply Co.
Omaha—Powell Supply Co.
New Orleans—Interstate Electric Co., Baronne & Presido Sts.
Buffalo—J. W. Frey, 722 Main St.
Canada—Canadian General Electric Co., Toronto.
St. Louis—The Phoenix Auto Supply Co., 3974-6 Olive St.

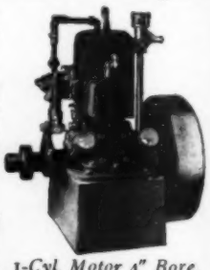
The Ideal Marine Motor
for pleasure and business

NO matter how classy the "lines" of your hull, it is the *motor* that drives the boat and upon its competency depends your boating success. Judge carefully the individual merits of all standard makes of motors, compare the WAYNE against the "field" and the WAYNE will eventually go into your boat.

SEND FOR WAYNE CATALOGUE

The University of Michigan have tested and tried the WAYNE MOTOR in the most severe service, and this Institution has only the highest endorsement. The WAYNE is the result of sixteen years of engine evolution. A motor that is non-vibrating; that has only one-third the moving parts of the ordinary motor; that is designed for concentrated energy; that contains the highest grade materials and workmanship—that's the WAYNE—the motor for *YOU*.

The WAYNE is built in one and two cylinders and is rated at four and eight horsepower, respectively. Don't fail to send for our beautiful 1911 Marine Catalogue today.



1-Cyl. Motor 4" Bore, 4" Stroke, 4 H. P.

THE WAYNE MOTOR COMPANY
305 Jefferson Avenue Detroit, Mich.

YOUR CRUISE

will be more pleasant if you take with you some

LUXRY GRAPE JUICE

PURE UNFERMENTED WINE
made from the delicious Lake Erie
ISLAND GRAPES

LUXRY Catawba Juice is golden colored and of delightful bouquet and flavor.

LUXRY Concord Juice is red and clear, sweet and rich in flavor.

Send for recipies for making fancy drinks with grape juice.

Prices f. o. b. Sandusky, Cleveland or Cincinnati, O.

10 cases (12 bottles, 5 to gal. in case)	-	-	$50.00
5 " " "	-	-	27.50
1 case " " "	-	-	6.00

Add $1.00 per ca e if wanted packed 24 bottles (10 to gal.) to case.

This ad. is good for $1.00 reduction on your bill if sent in with cash or its equivalent before July 1st, 1911. Check items desired and send it in.

THE ISLANDS COMPANY
1618 Williamson Bldg., Cleveland, Ohio

Belle Isle Motors

Putt! Putt! Putt! That's motorboat music. It tells about a Belle Isle motor hitting regularly and all parts working perfectly. Your only attention is to the steering wheel, because your engine propels perfectly at a speed adjustable to your desires.

Thousands of the famous Belle Isle marine engines have been in use for years, and give every satisfaction in service.

They represent the most advanced ideas in two-cycle engine design. The material and workmanship are the best. Engine runs on gasoline, kerosene or alcohol.

Belle Isle No. 1

$23 Bare Engine

2 to 2 1-2 Horse-power

Complete engine with accessories, $43.50; with fresh water boat fittings, $47.00; with salt water fittings, $50.00. We have other models with accessories and fresh water fittings as follows: 4 to 5 H.P., $69.00; 5 to 6 H.P., $92.65; 9 to 10 H.P., double cylinder, $155.50. Write at once for full information.

Concrete Form & Engine Co.
12 Motor Boat Lane, DETROIT, MICH.

A Great Moral

is none the less great because couched in a fascinating love story.

The Common Law

is a stalwart appeal for the sacredness of the home—in addition to being

Robert W. Chambers'

most delightful novel.
Read it to the end.

JUNE
COSMOPOLITAN

At the News-stand 15c per copy

By Subscription $1.00 per year

$25.00

For this powerful 1-1¼ h.p. "Arrow Junior" 1-cylinder engine, fully equipped, ready to run.

COMPLETE EQUIPMENT consists of propeller wheel, 5-ft. shaft, stuffing box, water circulating system, complete ignition system with commutator, controlling lever, battery, spark coil, spark plug, wire, etc., carburetor with float feed, under-water exhaust fitting, ball thrust bearing, handle starter, complete instructions. All complete ready to set on engine bed of boat. Suitable for small craft of all kinds, canoes, row boats, 14-16 ft. launches, tenders, dingheys, small auxiliary power for sail boats, or can be used for pumping water, running small lighting dynamo, etc. Height 10 inches, weight 35-40 pounds complete, power up to full 1½ horse power, speed up to 1500 r.p.m. Bronze bearings, steel I-beam connecting rod, steel crankshaft, guaranteed for 5 years by the Engine Works. Not a toy but a REAL MAN'S engine. Salt water fittings only $3.50 extra. Carburetor uses gasoline, kerosene, distillate, naphtha, benzine, alcohol, etc. AN HONEST ENGINE, AT AN HONEST PRICE.

2 CYLINDER

BUY DIRECT FROM OUR ENGINE WORKS AND SAVE MONEY

We ship from factory direct to you. We as manufacturers guarantee the engine to you. We as manufacturers recommend this engine to you. Best materials employed. Best of equipment. Quantity methods of construction enable us to make the low price. You save *all* agents', dealers' and jobbers' profits. Everything in the way of an extra pro.it is pared away from this great little motor engine. FULL VALUE in return for your money. *Booklet A* tells all about the ARROW JUNIOR ENGINE. Other sizes up to 90 h.p. Prices in proportion. *Order now* and get a quick delivery. No man can afford to row or use a paddle with such a reliable motor at such a price waiting to go to him by fast freight. Fill out the application coupon today while this BEWILDERING OFFER stands. Fill it out! Mail it! Throw away your oars! Throw away your paddle and ride like a gentleman in your own motorboat.

WE SHIP DIRECT FROM FACTORY TO YOU

APPLICATION COUPON.

Arrow Engine Works, Detroit, Mich.: Send me one of your Arrow Junior engines with..... water boat fittings. I enclose remittance of $.... to show good faith. You may send the engine collect for the balance and allow me to examine it at transportation companies' warehouse before settling for balance. You agree to guarantee the engine for five years.

Signed.....

Town.....

County.....

State.....

Arrow Engine Works

500 Boydell Building

Detroit :-: Michigan :-: U. S. A.

3 CYLINDER

VALENTINE'S
VALSPAR
"The Varnish That Won't Turn White"

VALENTINE & COMPANY

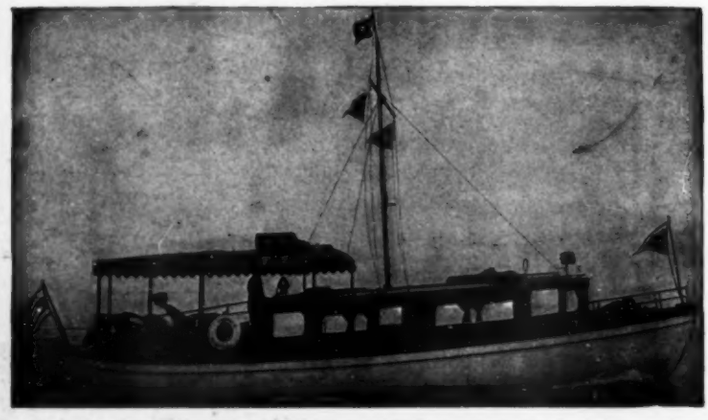
New York Chicago Boston Toronto London Paris

W. P. FULLER & CO., San Francisco
Sole Agents for Pacific Slope and Hawaiian Islands.

VALSPAR BRONZE BOTTOM PAINT

Prepared ready for use. Will not ***harden*** or ***turn green*** in the can. Works easily and dries ready for second coat in three hours. Will keep the bottom clean an entire season.
Can be polished for racing finish.

Trade Mark
VALENTINE'S VARNISHES



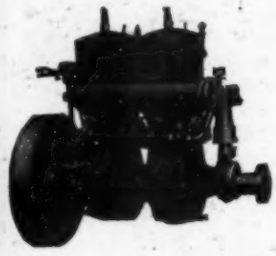
Get the Worth of Your Money

Will find it in our stock boats
21-25-30-37 6" and 40 feet

The BAYONNE LAUNCH CO.
East 36th St. and N. Y. Bay
Bayonne, N. J.
Take C. R. R. of N. J. to 33rd St. Station

THE LIBERTY

Before selecting a Marine Engine write for a "Liberty" Catalog



IT GIVES DETAILS, prices and information which you should know. we make the following sizes:

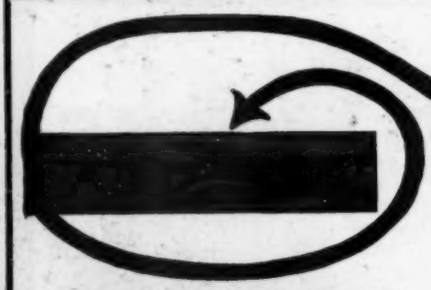
1½ H. P., 2½ H. P., 3½ H. P., and 6½ H. P. Single cylinder.
7-8 and 12-14 H. P. Double cylinder.

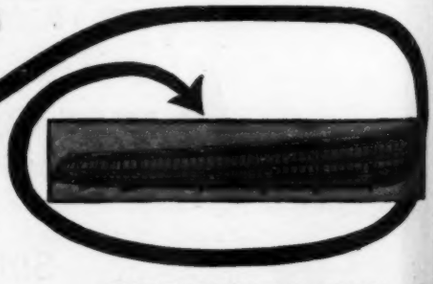
The double cylinder motors are remarkable engines on account of the power they will develop and on account of the low price at which they are sold.

Our Accessories Will Save You Money. *Write for catalog.*

Detroit Auto Specialty Co., 909 Greenwood Ave., Detroit, Mich.

THIS or THIS
when you build your New Boat





We are Naval Architects and Engineers

Specializing in Motor Boats, and build all kinds Large and Small
SPEED BOATS WORK BOATS
CRUISERS AND LAUNCHES
Let us send you our Catalog and convince you of the superiority of the FAULTLESS System.

VALLEY BOAT & ENGINE COMPANY
50 River Street, Saginaw, Mich.

THE KNOCKED DOWN WAY

Means you must buy lumber, build moulds, spend weeks of hard labor in assembling a lot of loose parts, besides steaming and bending ribs to get the resemblance of a boat.

THE FAULTLESS WAY

Means frame is all erected, every rib bent to its exact position, sheer strakes, bilge clamps, and garboard strakes all fitted and permanently fastened. Two hours work and you are ready to begin planking.

What If Your Boat Burns?

Protect yourself against damage or loss of your boat through burning, sinking, collision, running on the rocks, or many other disasters by taking out a policy that covers the usual risks of a boat owner. It costs but a few cents a day for the satisfaction of good protection.

Insurance Company of North America

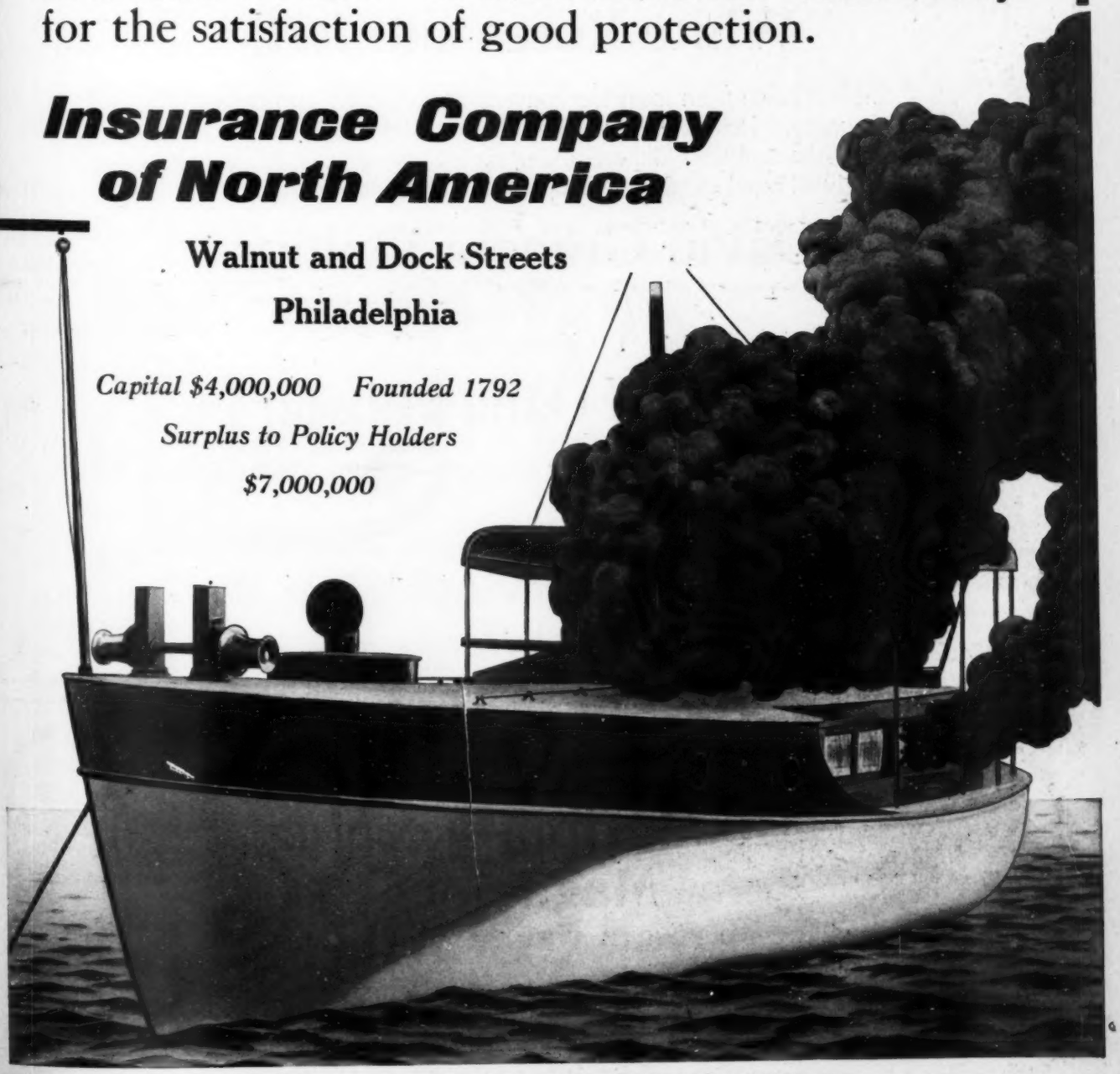
Walnut and Dock Streets

Philadelphia

Capital $4,000,000 Founded 1792

Surplus to Policy Holders

$7,000,000



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Good Housekeeping Magazine

White Roses and Red

She was taken fresh from the convent, and plunged into the vortex of society. Her adventures with the older and sophisticated society man—the man who "did everything right"—are woven into the most delightful novel the Spring has produced. As a background,

David Graham Phillips

has drawn what is perhaps his cleverest picture of society—its life, aims and temptations. The illustrations by

Charles Dana Gibson

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The June issue is our Recreation Number. In addition to its fiction and regular household departments, it is rich in summer ideas and vacation plans.

Three Gibson Pictures Free. David Graham Phillips' novel will run for four months, and by accepting this special offer you not only secure the novel complete, but in addition you secure a set of Gibson's famous masterpieces—ABSOLUTELY FREE. All you need do is fill in the coupon in the lower corner, tear it off and mail it today with fifty cents to pay for the next four issues of GOOD HOUSEKEEPING MAGAZINE. The three Gibson pictures are yours free.

Good Housekeeping Magazine

381 FOURTH AVE., NEW YORK CITY

FILL IN THIS COUPON AND MAIL IT TODAY

Good Housekeeping Magazine, 381 Fourth Ave., New York City

Please send me the three Gibson Pictures free. Herewith I enclose 50c to pay for the four months' subscription to Good Housekeeping Magazine, including David Graham Phillips novel, "White Roses and Red."

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What Experience has taught us regarding Motor Lubricants

The gas engine is comparatively new.

During its experimental stages, ordinary steam cylinder oil was used. It left so heavy a carbon deposit in the cylinders that the engine would quickly clog up and stop.

This retarded the development of the gas engine and presented a new lubricating problem.

It was plain that an efficient gas engine lubricant must leave no carbon deposit.

Lubricating oils that largely overcame this difficulty were then produced. This permitted a rapid development of the gas engine.

Finally, however, after exhaustive practical tests, we succeeded in further eliminating from lubricating oil the carbon-forming elements.

The result is an oil that we believe to be the best gas engine lubricant yet produced.

Polarine

POLARINE OIL has set a new standard in motor lubricants.

Its consistency is not materially affected by heat or cold.

It flows freely down to the zero point.

Properly used, it will reduce repair bills and prevent breakdowns.

The Polarine Brand covers: POLARINE OIL, sold in sealed cans, gallon and five gallon sizes, or in half-barrels and barrels.

POLARINE TRANSMISSION LUBRICANTS prepared in three consistencies, to suit different types of construction; put up in cans of convenient size, also in barrels and half-barrels.

POLARINE CUP GREASE AND POLARINE FIBRE GREASE, sold in round cans, the former for use in cups, the latter of high melting point, especially adapted to use on universal joints.

All dealers sell Polarine Lubricants, or can get them for you.

If you use any kind of gas engine send for our booklet, "Polarine pointers." It includes hints on lubrication and the causes of motor troubles. Write our nearest agency.

Standard Oil Company

(Incorporated)

"One Dry Man is Worth Three Wet Ones"

In the lightest showers or the heaviest storms ImpervO is always waterproof, always comfortable, always sanitary, always light. When you go yachting or motor-boating prepare for bad weather by having a supply of ImpervO clothing on board for the convenience of your guests and crew.

But be sure and get ImpervO—the *only real* waterproof clothing.

Don't be satisfied with oilskins, cravenettes or rubber clothing. They are either too heavy, not sufficiently waterproof, or require too much attention to keep them "nearly" waterproof.

ImpervO retains its qualities for a long time without being touched. No need to spend time oiling it every time you want to wear it; furthermore, it is never sticky, greasy, gummy or heavy—like the ordinary waterproof (?) clothing. ImpervO is rubberless and can be cleaned with soap and water. It is absolutely water, grease and acid proof, and never requires oiling.

ImpervO is the only goods not affected by hot weather; it has been used for years by Army officers throughout the tropics. The U. S. Army Infantry board endorsed it as the best ever for Ponchos, shelter tents, etc.

ImpervO clothing consists of Men's Jacket Sailor Suits, Long Coats, Auto and Hunting Coats, Army Capes, Overalls, Hats, etc., Ladies' Long Capes, Coats and Skirts, all in the Army Olive Drab or Black colors. It is also sold by the yard for Awnings, Boat Covers, Decks, etc.

If your dealer cannot supply you, write direct for catalog Y-4, samples and prices to:

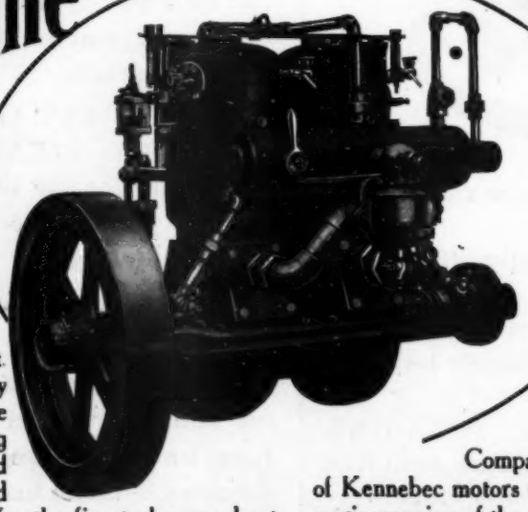
If your dealer cannot supply you, write direct for catalog Y-4, samples and prices, to

E. A. Armstrong, 209 W. Kinzie St., Chicago

ImpervO Agents: New York City: Warnock & Co., 19-21 W. 31st St.; The Howard Place Co., 162 South St. Boston: A. S. Morss & Co., 220 Commercial St. Providence, R. I.: Walter Coleman & Sons, 300-312 S. Water St. Philadelphia: Jacob Reeds' Sons, 1424 Chestnut St.; F. Vanderherchens' Sons, 7 N. Water St.; E. A. Edwards (Naval Architect), 14 S. 18th St. Washington, D. C.: S. N. Meyer, 1231 Pennsylvania Ave.

KENNEBEC

Gasoline Engines



KENNEBEC Gasoline Engines are not "rough jewels"—they are "polished jewels" in every respect. They are sturdy enough for the severest working boat usage, and handsome and speedy enough for the finest pleasure boat.

Besides, in the Kennebec you get full-rated horsepower, plus a little bit more. Every Kennebec exceeds its rated horsepower by 30 to 40 per cent. Compare the bores and strokes of Kennebec motors with those of any other marine engine of the same horsepower.

Kennebec, 1 cylinder: 2 H.P., 3½" bore and 4" stroke; 3 H.P., 4½" bore and 4½" stroke; 5 H.P., 5" bore and 6" stroke.

Kennebec, 2 cylinder: 4 H.P., 3½" bore and 4" stroke; 6 H.P., 4½" bore and 4½" stroke; 10 H.P., 5" bore and 6" stroke.

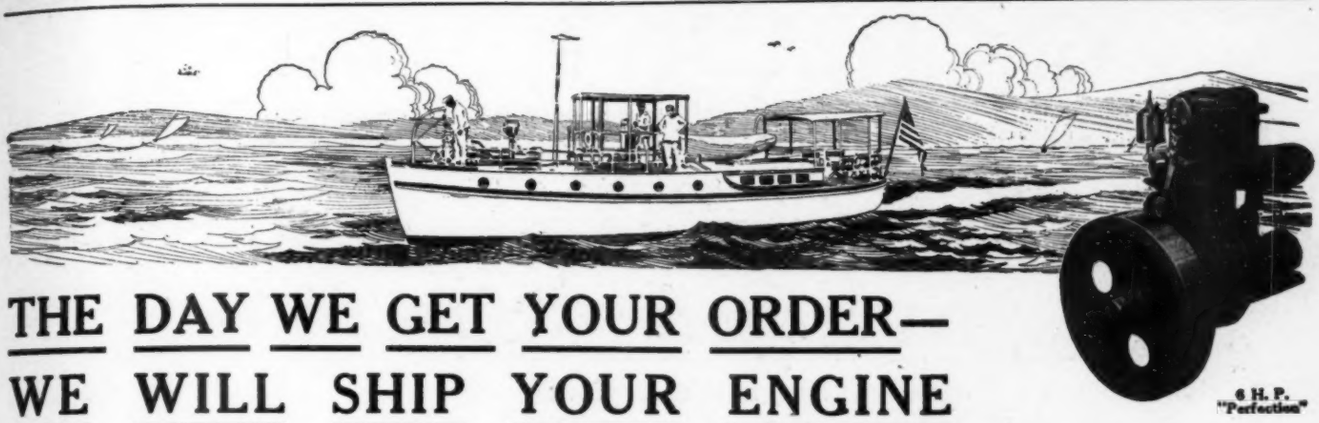
Kennebec, 3 cylinder: 6 H.P., 3½" bore and 4" stroke; 10 H.P., 4½" bore and 4½" stroke; 15 H.P., 5" bore and 6" stroke.

Be sure to get horsepower for your money

SEND FOR ILLUSTRATED DESCRIPTIVE PRICE ATALOGUE

Torrey Roller Bushing Works, Bath, Maine.

ASK ANYONE WHO OWNS A KENNEBEC



6 H. P. "Perfection"

THE DAY WE GET YOUR ORDER— WE WILL SHIP YOUR ENGINE

At this time of the year when boats are starting to move all over the country a man **wants his engine and wants it quick.** He doesn't want to wait around and receive a lot of promises. He wants to use his boat without delay. He has no time for a fifteen or thirty day promise.

This condition we are prepared to meet. The very day we get your order we will ship your engine. We anticipate the season's demand and build accordingly. No man is asked to wait. No man is held off. No man is jollied along with a lot of smooth promises. If you wire us, your engine will be shipped the very day you telegraph. If you are one day from us by letter, your engine is shipped the day after you write the letter.

No other concern in the world is prepared to meet the demands as we are. We have ready right now the very engine you require, no matter what size. Every engine shown in our catalogue will reach you just as rapidly as a freight train can haul it. Or for a small additional cost you can have it rushed to you by express. We have special shipping facilities at this season of the year, and a sufficient force of men to handle the orders. We have made every possible arrangement to get you your engine the minute you want it. Don't delay. Get your order in quick. Write or wire us the size and style you want.

Free Book For Boat Enthusiasts

HERE is another place where we have spread ourselves. Of course, we know that no book can do the "Perfection" justice but we believe the book we have produced to be worthy of the great motor. It describes it and pictures it to you in a way that must impress you with the features described above. In this book we go into details. We show you that we build in 2, 2½, 3½, 4, 6 and 8 H. P. in the single cylinder engines; also 7 to 30 H. P. in the 2, 3 and 4 cylinder engines. We tell you **how** we are able to get the prices down so low—from only $40 to $450 according to type and horse power. Write today for this book and let us send you, as well, the name of our dealer nearest you and the letters described above. Do not fail to send us the coupon below today so that you can get this important information right away. You can't tell how soon you will need it. You also can't tell how soon our supply of books is going to run out if the present mad rush keeps up. Letters are pouring into our office every mail delivery and it just seems that everybody wants "Perfections." So don't hesitate. Send the coupon now.

Full Of Information For All Boat Lovers

"Perfection" Marine Motor

In Every Respect Worthy of the Name

We want you to consider this name "Perfection". It was not given to our motor carelessly or because someone had a sudden idea. We call our engine the "Perfection" because we believe this word most adequately describes it, conveys to the mind its distinct character. Every part of the "Perfection" is *perfection* itself—brought to a point where it is impossible to improve. There is nothing to get out of order, nothing to pile up repair bills. Some of our users have written us that they have run "Perfections" for years without a penny spent for repairs or overhauling. Some of these men were green hands at motors when they began using "Perfections." But anyone—man, woman or child—can run a "Perfection" without the slightest difficulty. It starts easily. Requires very little attention. A free flow of gasoline and a good spark and she keeps the boat hustling along mile after mile at a great old rate. There are no heavy vibrations. You are not disturbed by strong "pounding." The "Perfection" has a smooth even purr that is pleasant to the ear, that gives a sense of speed and power under marvelous control and being delivered in the efficient and economical way.

Our Rigid System of Inspection and Tests Insures Absolute Satisfaction

We have a strict rule in our factory from which there is absolutely no appeal. Every part must be inspected. From the time the metal is shaped until the finished parts appear experts watch closely every move of the workmen. Every minute every item is scrutinized. Not a detail escapes notice. Everything that goes into a "Perfection" has to be perfect and if it does not measure up to our standard it has to be done over. We have another rule—a real **law** in the Caille factory—and that is that every engine must make good under a working test before shipment. Each "Perfection" is put to work turning a propeller in a tank of water and it has got to "show us" that it will do more for you than we claim it will—that it will always test above the specifications.

COUPON

Caille Perfection Motor Co.,
103 Caille St.,
Detroit, Mich.

Gentlemen:—Kindly send me at once your **free** book for boat enthusiasts.

Name_____

Address_____

Cut this coupon out and mail it today.

CAILLE PERFECTION MOTOR CO.,

103 Caille Street, Detroit, Michigan

Send for our Stationary Kerosene Engine Catalog if interested

2 H. P. "Perfection"

Engines carried in stock by: Bruns Kimball Co. 134 Liberty St., New York, N. Y. Gibbons & Stream, 213 Canal St., New Orleans, La. Woodhouse Gasoline Engine Co., Seattle, Wash. Geo. G. McLaughlin Mfg. Co., Boston, Mass. The Marine Engine Supply Co., Los Angeles, Cal. Carman & Bowes, Bourse Bldg., Philadelphia, Pa.

COLUMBIAN

"THE WHEELS THAT WIN"

ACE II Fastest boat at Palm Beach won TIME PRIZE with a Columbian and a 100 horse power Sterling Engine. Speed 32 miles per hour.

T and S Winner of $2500 GRAND PRIZE for endurance, made fastest time with a Columbian and a 100 horse power Sterling Engine, 31 miles per hour. Wheel arrived too late for race.

WRITE FOR

"PROPELLERS IN A NUT-SHELL"

AND OUR

ACCESSORIES CATALOG

DESCRIBING OUR EXCLUSIVE LINE OF

Manganese Bronze Struts, Rudders, Etc.

UNIVERSAL STRUT
SELF ALIGNING

COLUMBIAN BRASS FOUNDRY

625 ATLANTIC AVE. FREEPORT, LONG ISLAND, N. Y.

New York City Local Salesroom, 133 Liberty Street

"Service Is the Acid Test of MATTHEWS' Quality"

ASK ANY OWNER

MATTHEWS BOAT COMPANY,
Port Clinton, Ohio.

MAY 5, 1911.

GENTLEMEN: After a year's use of my 85-foot yacht, "Mahapa II," the second large cruiser built by your firm for my service, I feel that a letter is due you giving an expression of the satisfaction that I have received at the hands of your company.

The boat has been in service on the Great Lakes, and especially in the neighborhood of my summer home near the Soo, on Lake Superior.

As a sea boat, "Mahapa H" has been operated about five hundred miles, and even in the roughest weather, which we did not try to avoid, the boat has been found to be remarkably steady, and has never given us the least apprehension. The two 60-horsepower Craig motors installed, enable us to secure a speed of better than fourteen miles per hour, which we consider quite remarkable when taking into account the heavy construction and wide beam. The beautiful finish and workmanship of the yacht has been admired by every one who has seen her, and it reflects a great deal of credit to your company.

I will be pleased to have you refer any prospective buyers for large boats to me should you see fit to do so.

Yours respectfully,
(Signed) H. A. PARSONS.

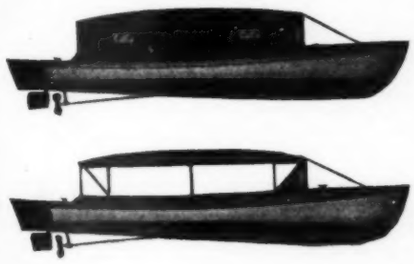
The ultimate economy of an investment for pleasure is measured by the extent to which it pleases the owner.

Our new catalogue is yours for the asking

THE MATTHEWS BOAT COMPANY : : Port Clinton, Ohio

DO YOU KNOW THE Kenyon TRADE MARK

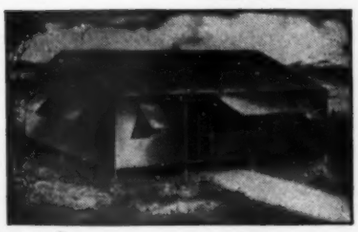
KENYON MOTORBOAT TOPS were the first tops of this style made for motorboats, carrying the only patents ever granted on this type of a top for motor craft. They are made in the best, most modernly equipped factory in the world, devoted exclusively to these lines. Every piece of material is special. Special materials must be purchased in large quantities. No small maker can imitate the KENYON TOP because they have not the materials and there are patented features which they cannot imitate; and our price is low. ***Ask any reputable boat builder what he considers to be the best top.***



We also originated the KENYON LIFE PRESERVING CUSHION and LIFE PRESERVING PILLOW. They are good things and widely imitated. Ours are the only life preserving cushions and pillows guaranteed to fulfill life preserver requirements in pleasure boats. Your comfort calls for a good cushion. KENYON CUSHIONS are better because we use better materials and better workmanship. SAFETY calls for LIFE PRESERVERS. KENYON CUSHIONS and PILLOWS are available immediately in case of accident. They can't sink with the boat, and they are guaranteed to support more weight and support it for a longer time than a cork jacket. The individual pillow costs you $1.50 each, either at your marine supply dealers or by express prepaid. Orders filled the day received. We have an attractive proposition for dealers on our entire line.

In motorboat equipment we have, in addition to Kenyon Tops and Life Preserving Cushions, Cockpit covers, boat covers, fenders and everything in the line of canvas work, all of this being made from KENYON HEAVY DUTY DUCK, guaranteed not to rot or mildew. These goods are all better than can be furnished elsewhere.

The Kenyon Kenyon Take Down House



THE KENYON TAKE-DOWN HOUSE is the most practical portable summer house ever constructed. We carry a stock for your convenience, ship the day your order is received either by letter or telegram. You can erect and start to live in the house the day you receive it. It is sanitary, absolutely proof against wind and rain; it is guaranteed for three years' service and will last ten, with ordinary care. Every opening is screened with absolutely rust- and mosquito-proof screen. These houses are made in sizes of from one to five rooms. Prices from $50 to $320 and the price includes finished hardwood floors, windows, screens, screen doors, ventilators and everything to make the house complete. It is made in GARAGES to fit every size of an automobile at prices of from $58 up.

Catalog and beautifully colored illustrations on anything in our entire line, are sent upon request, by filling out the coupon in the corner of this ad.

R. L. Kenyon Co.,
Dept. 5,
Waukesha, Wis.

Gentlemen:
I am interested in the following articles:

KENYON MOTOR BOAT TOPS ☐
KENYON LIFE PRESERVING CUSHIONS ☐
KENYON TAKE-DOWN HOUSE ☐
KENYON TAKE-DOWN GARAGE ☐

Name .....
Address .....
City ..... State .....

The Aetna Brass Mfg Co

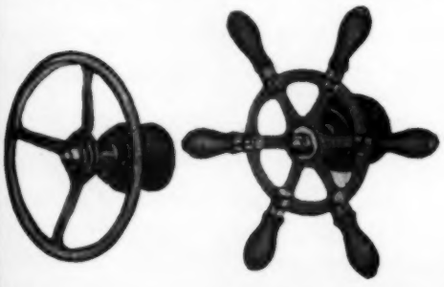
"PRODUCTS TO PUT ON POWERBOATS"

MAY WE SEND YOU OUR FREE BOAT-FITTINGS BOOK?

We are **Makers.** We can quote you **Factory Prices.** Perhaps you are in a territory where we can appoint a local agent to advantage. Perhaps you would like to demonstrate our goods on your own motorboat. New **Selling Plan** for launch supplies tells how. Originators and designers of **AETNA** speed and working propellers (the kind that make the engine give more power); steering wheels; chocks and cleats; marine lamps (in sets to comply with government requirements, or singly); special handles for doors, lockers, deck traps, hatch covers, etc.; extra fine railings, bells and deck fittings; special locking type (safety) stern bearings and stuffing boxes; under-water exhaust fittings for all sorts of engines; a new type of rear starting device which is easy to attach and works perfectly. Our **Complete Catalog** of

Motorboat Hardware

is free. Tells how to improve the appearance of any boat. Tells about our deck fittings that "stay put." Tells about our new "tarnish-resisting" composition brass; our under-water exhaust fitting that actually gives many engines more power and complies with State laws against noisy exhausts from motor boat engines. All **AETNA** products guaranteed against defects in materials and workmanship. Look over your own boat. Look over your neighbor's boat. Think how a few fittings would improve the appearance. Figure over all the boats in your vicinity, and the number of little brass fittings (good commission to you) that can be sold will surprise. Everybody wants our handsome goods. Prices very reasonable indeed. Suppose you put your name on a postal card and mail today. A man in our factory office has some important information to impart to you.



VERY INTERESTING PROPOSITION TO LOCAL BOAT BUILDERS AND ENGINE AGENTS. IT MEANS MONEY TO YOU IF INVESTIGATED AT ONCE.

AETNA

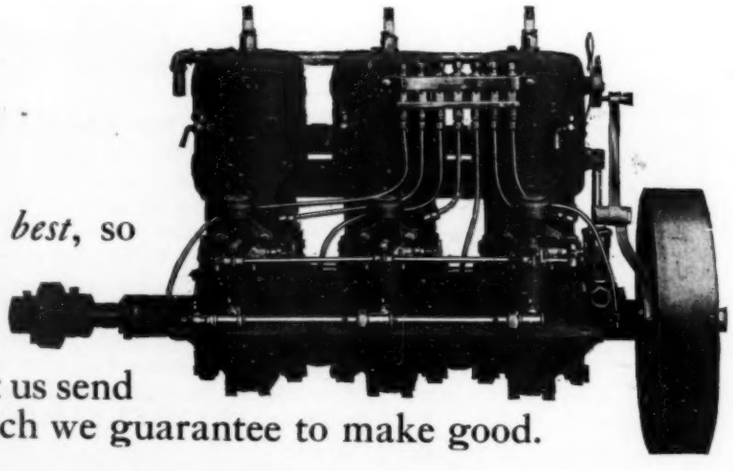
The Aetna Brass Mfg. Co.
4802 Hamilton Ave.,
Cleveland, Ohio, U.S.A.

MOTOR BOATING 45

WIRELESS THOUGHTS

We have tried unsuccessfully for days to think of some way to say things expressive and impressive enough to suit us and properlydescribe

Tuttle Motors



Competitors all claim the *best*, so that this word is useless. We have the thoughts all right and wish they could be transferred by wireless, but let us send you our catalog of truths which we guarantee to make good.

TUTTLE MOTOR CO.

543 Holden St., Canastota, N. Y., U.S.A.

"DIXIE IV"

and

WOLF'S HEAD CRYSTAL OIL

What the Dixie's Owner Says:

APRIL 28, 1911.

WOLVERINE LUBRICANTS COMPANY,
80 BROAD STREET, NEW YORK.

GENTLEMEN:

I beg to state that in our new boat Dixie IV, which we shall race this season in the World's International Motor Boat Races, nothing but your Wolf's Head Heavy Crystal Oil will be used.

We have tried nearly every oil manufactured, but find this oil gives us the very best results.

This quality of oil was formerly manufactured for us by your President, Mr. Tomlinson, and we would not feel confident of getting the same oil, regardless of its name, unless it were produced under his personal supervision.

Yours very truly,

[Signed] FRED BURNHAM,

Vice Commodore,
Motor Boat Club of America.

We are the only concern in the world who make completely filtered Pennsylvania Oils, in all weights, of sufficient body and flash test to properly lubricate the cylinders of a gas engine.

WOLF'S HEAD OIL

Wolverine Lubricants Company
OF N. Y.

80 BROAD STREET :-: :-: NEW YORK

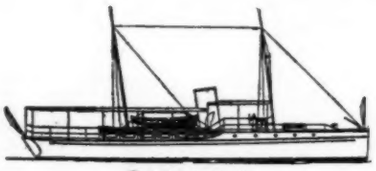
CHICAGO	PHILADELPHIA	BOSTON	ATLANTA
3506 So. Morgan St.	119-121 N. Front St.	224 Milk St.	184 Marietta St.

WOLF'S HEAD OIL

W. W. ROBINSON, PRES. J. TRUMPY, VICE-PRES. NAVAL ARCHITECT JOHN H. MATHIS, SEC.-TREAS.

MATHIS YACHT BUILDING CO.

CAMDEN, N. J.



SPECIALTY
50 FT. TO 100 FT. CRUISERS
POWER AND SAIL

April 27th 1911.

J. S. Hildreth, Advertising Mgr.,
Motor Boating,
381 Fourth Ave.,
New York, N. Y.

Dear Sir:

You might be interested to know that we now have under construction, from our own design, a House Boat for a prominent member of the New York Yacht and Larchmont Yacht Clubs. This boat will be 77' long, 18'6" beam and draws 30" of water, will be twin screw, tunnelled, and similar in a great many ways to the House Boat "COCOPOMELO" built by us last fall for Mr. William Disston of Philadelphia, but a little more yachty in appearance.

We wish to state that we have traced this contract from our advertisement in your magazine. Thanking you for all past courtesies, we are,

Very truly,

MATHIS YACHT BUILDING CO.

WWR/F W. W. Robinson PREST.

P.S. We have also just received a contract for a 90' House Boat from Mr. Geo. C. Thomas Jr., of Philadelphia, to complete in ninety days.

WWR.

THE ABOVE LETTER IS ONE OF MANY

Other proofs of MoToR BoatinG's supremacy as an advertising medium are: Circulation guarantee 25,000 copies per issue and steady increase in amount of advertizing carried.

Amount of Advertising Used by MoToR BoatinG Advertisers

In March, 1910, we ran 29,988 agate lines.
In March, 1911, we ran 44,856 agate lines
Gain of 1911 over 1910, 14,868 agate lines.

THE MONEL PROPELLER
B
MONEL METAL
MONEL METAL
C C
TRADE MARK

NO MATTER HOW FAST YOUR BOAT IS, A MONEL METAL PROPELLER WILL MAKE IT FASTER

This Is Why —

Monel Metal takes on a polish that for clean, smooth surface, nothing but glass approaches.

Result—a propeller that is far more nearly frictionless than any other kind. It goes through the water just as though it were perpetually coated with a film of oil.

This smooth, glassy finish of Monel Metal is permanent. Unlike steel, brass, or bronze, neither corrosion nor rust can affect it, no matter how long it is in either salt or fresh water.

What Monel Metal Is —

Monel Metal is a natural alloy containing 67% nickel (which it closely resembles in appearance), 27% copper, and 6% other metals, including iron and manganese.

Its high tensile strength, non-corrosive and non-rusting qualities, and its permanent, frictionless finish make it peculiarly the right metal for propeller wheels.

Monel Metal Strength —

Cast Monel Metal has a tensile strength of 70,000 pounds per square inch, exceeding other metals used for propellers by from 5,000 to 30,000 pounds per square inch.

Shocks coming with high speed, or from other causes, have no effect on Monel Metal. Far less distortion results than by the use of any other metal for propeller wheels. So definitely is its tensile strength and high modulus of elasticity established by actual tests, that the United States Navy has adopted propellers made of Monel Metal for battleships and for torpedo boat destroyers.

Other Uses for Monel Metal —

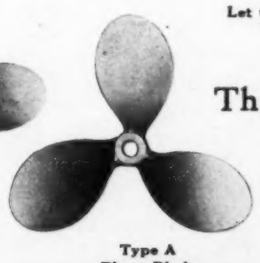
Monel Metal can be used for an indefinite variety of marine purposes. All metal deck fittings of beautiful silver-like Monel Metal enhance a boat's appearance a hundredfold. Shafting, bearings, and various parts of the engine's construction are better appearing and longer lasting in Monel Metal than in any other.

Monel Metal for Propellers —

is where this wonderful metal reigns supreme. Its great tensile strength, its high modulus of elasticity, its non-rusting and non-corrosive qualities, its glasslike, frictionless finish—all these characteristics of Monel Metal recommend themselves to the owner as the one way to get maximum efficiency in propeller wheels.

Let us send you our Monel Metal Book which fully describes Monel Metal and all its wonderful properties.

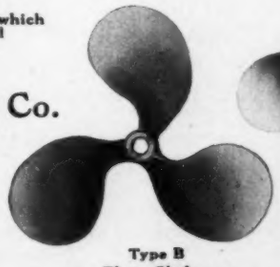
Type A
Two Blade



Type A
Three Blade

The Bayonne Casting Co.

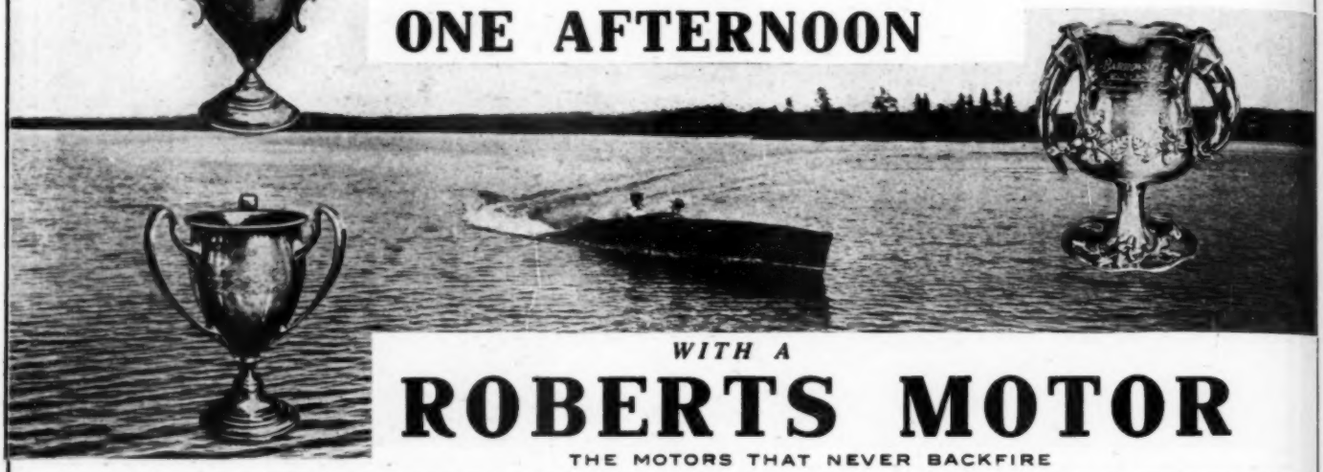
Bayonne,
New Jersey



Type B
Thre- Blade

Type B
Two Blade

THREE VICTORIES
IN
ONE AFTERNOON



WITH A
ROBERTS MOTOR
THE MOTORS THAT NEVER BACKFIRE

THE "ATOSIS" OF LAKE COBOSEECONTEE, MAINE, OWNED BY B. H. NORRIS, OF SCHENECTADY, N. Y., EQUIPPED WITH A ROBERTS MODEL 4-M 20-H.P. MOTOR, MADE A CLEAN SWEEP OF EVERY RACE ENTERED. THE GRUELLING TEST OF A RACE PROVES ROBERTS SUPERIORITY—THE ABILITY TO RUN AND TO KEEP ON RUNNING AT TOP SPEED WITHOUT TROUBLE OF ANY KIND.

RELIABILITY IS A CHARACTERISTIC OF EVERY ROBERTS MOTOR

PROMPT DELIVERIES OF ALL MODELS

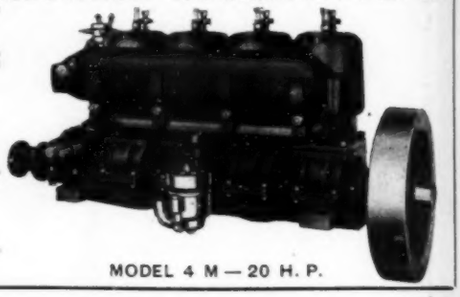
Made in Nine Sizes — One to Six Cylinders — Three to Sixty H. P.

Guaranteed for Five Years

OUR STANDARD MODELS WEIGH FROM 98 TO 635 POUNDS. SPECIAL LIGHT WEIGHT MODELS WEIGHING FROM 60 LBS. (3 H. P.) TO 365 LBS. (60 H.P.).

OUR CATALOG WILL INTEREST YOU—SEND FOR IT TO-DAY.

THE ROBERTS MOTOR COMPANY 1501 COLUMBUS AVE. SANDUSKY, OHIO



MODEL 4 M — 20 H. P.

Where to Get Gasoline

Supply Stations for Power Boats

STANDARD OIL COMPANY OF NEW YORK

Where Launches Can Load Direct From Our Tanks

NEW YORK CITY
Foot East 120th Street
Foot West 141st Street, North River
Clason Point

STATEN ISLAND
Port Richmond — Tottenville — Princess Bay
Stapleton — Schooner "Lawrence"

BROOKLYN
Foot No. 10th Street — Foot No. 12th Street
Bond and First Streets — Gravesend Beach

NEW YORK STATE

LONG ISLAND SOUND
City Island (Robert Jacob) — Portchester
City Island (Ernest Roeder) — New Rochelle
City Island (N. Y. Motor Boat Co.) — Mamaroneck, N. Y.

LONG ISLAND
Greenport — Northport — Lloyds Neck — Bayville
Glenwood Landing — Montauk (Capt. E. B. Tuthill)
College Point — Cold Spring Harbor
Oyster Bay (Oyster Bay Canal & Dock Co.)
Port Washington (Manhasset Bay Yacht Club)
Huntington Harbor (J. S. Ott)
Canarsie (Perry Horton)
Rockaway Point (P. H. Reid)
Port Jefferson (Loper Bros).
Fisher's Island (A. H. Eldredge)

HUDSON RIVER
Tarrytown Boat Club — Tarrytown — Nyack
Tarrytown Yacht Club
S. O. Co. of New York. — Yonkers — Newburgh
Corinthian Yacht Club
Catskill — Hudson — Albany
Poughkeepsie Yacht Club, Poughkeepsie

ERIE CANAL
Rome — Utica — Syracuse
Rochester — Middleport — Lockport
Schenectady — Buffalo — Medina
Tonawanda — Albion — Brockport

LAKE ERIE
Buffalo — Dunkirk

NIAGARA RIVER
Buffalo (Foot Erie St.) — Buffalo (Foot Porter Ave.)
Grand Island (At Buffalo end of Ferry Floss's Dock)
Tonawanda — North Tonawanda

LAKE ONTARIO
Carlton — Summerville — Newport
Sodus Point — Point Pleasant — Charlotte
Sea Breeze — Manitou Beach — Oswego

ST. LAWRENCE RIVER
Cape Vincent — Clayton — Ogdensburg
Alexandria Bay

LAKE GEORGE AND ADIRONDACKS
Caldwell — The Hague — Lake George
Saranac Lake — Baldwin — Lake Placid

LAKE CHAMPLAIN
Plattsburgh — Rouses Point — Burlington, Vt.
Westport — Ticonderoga — Whitehall

CONNECTICUT
Greenwich — Stamford — South Norwalk
Bridgeport — New Haven — Stony Creek
New London — Cos Cob — Noank
Stonington — Rowayton — Mystic
Stratford

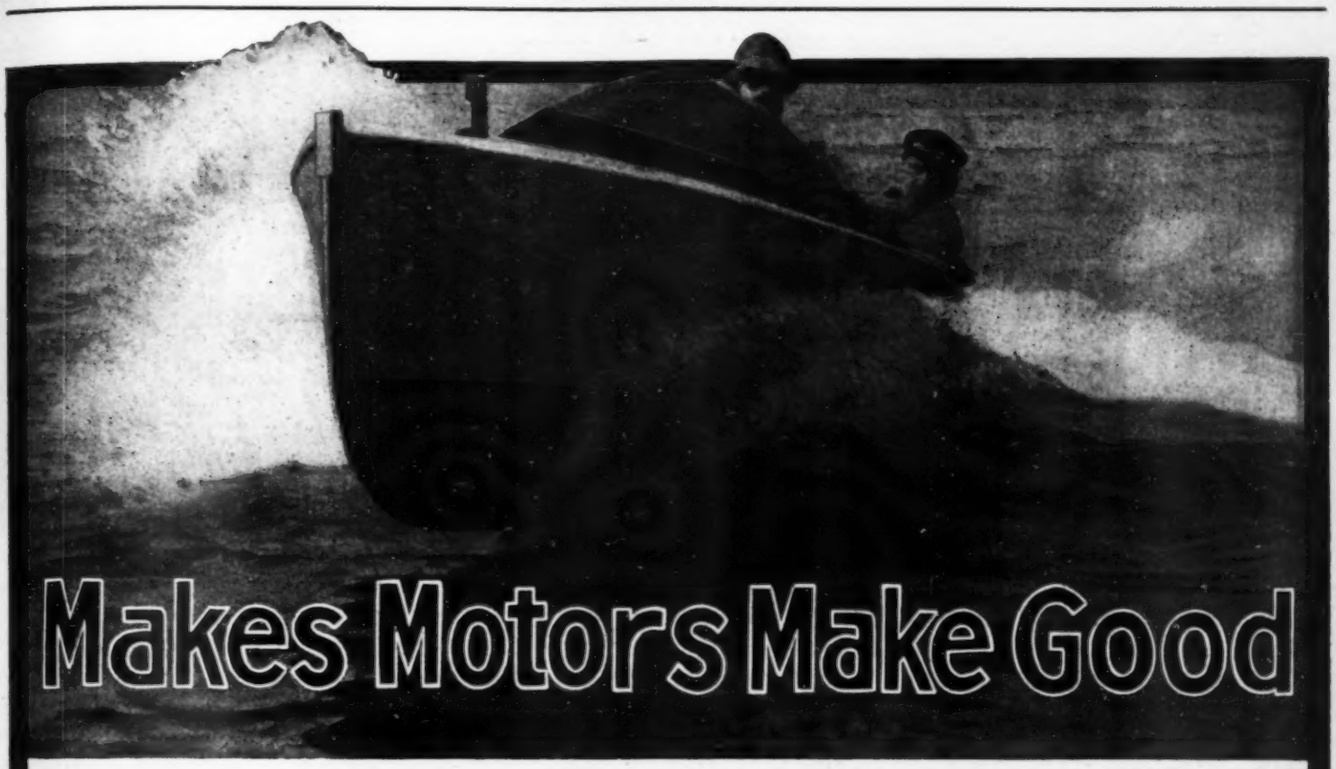
RHODE ISLAND
Newport — Providence — Pawtuxet
Wickford — East Greenwich — Bristol
Warren — Narragansett Pier — Block Island

MASSACHUSETTS
New Bedford — Provincetown — Newburyport
Fall River — Lynn — Hyannis
East Boston — Nantucket — Kingston
Dorchester — Oak Bluffs — Salem
Buzzard Bay — Vineyard Haven — Gloucester

NEW HAMPSHIRE
Portsmouth

MAINE
Portland — Kennebunkport — Rockland
Bath — Belfast — Eastport
Booth Bay Harbor

On the St. Lawrence River our own launches make deliveries to storage tanks at Summer homes along the River.
Headquarters of Launches at Clayton, N. Y.



Makes Motors Make Good

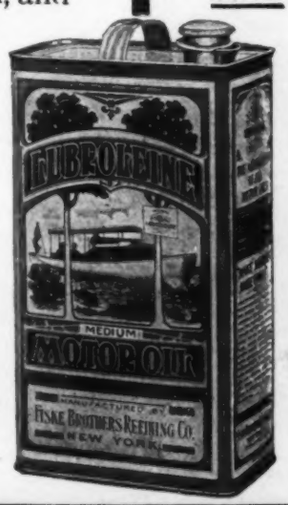
PERFECT lubrication will do more to "make motors make good" than anything else. The right cylinder oil will increase the efficiency of the engine in your boat; it will increase mileage to the maximum and reduce maintenance cost to a minimum by maintaining the oil film over all moving parts to which it is applied, thus reducing friction to the lowest point.

Inferior oils will not do these things —in fact they cost more per mile, no matter how much less they cost per gallon.

In the first place, inferior oils are not made from the right crude oil, and next, they are not refined and manufactured by the process that makes them perfectly efficient for motor cylinder lubrication.

LUBROLEINE MOTOR OIL "makes motors make good." It is a motor oil for which there is no substitute—the result of its continued use everywhere proves it to be without a peer. It is the one cylinder oil that will produce the perfect lubrication so essential to your engine — that will add horsepower, increase mileage, reduce maintenance cost, and eliminate friction to the vanishing point—all because it is made from premium Pennsylvania crude oil and manufactured and refined by a process that conserves the lubricating qualities and keeps the motor free from carbon.

Let us prove how to **make your motor make good.**



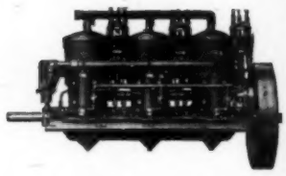
Send for our booklet,
"The Mission of Lubroleine"

FISKE BROTHERS REFINING CO.
ESTABLISHED 1870
NEW YORK NEWARK, N. J. PITTSBURGH, PA.

Distributors for California
WATERHOUSE & LESTER CO.
San Francisco
San Jose Oakland
Los Angeles Sacramento

CHAS. E. MILLER
New York City
Distributor for
Brooklyn Philadelphia
Boston Buffalo
Cleveland Detroit
Hartford Atlanta
New Orleans

Make Barrels of Money!



AGENTS are reaping a harvest selling DUBRIE ENGINES. Why not you? It takes no more work to sell a fine commission-bearing, profitable-to-the-agent engine, than it does to sell a 10c. cake of soap. Are you one of the men looking for a really BIG THING? If you are write today for our agents selling plan, free prospectus and very interesting catalog of engines. We desire to sell DuBrie Engines entirely through agents. Perhaps the territory where you are is not yet allotted. That will put you just in line for a real chance to embark in business yourself and free yourself from a position of service for another. Do not waste your life devoting your time to the betterment of an employer. Put your efforts into creating a permanent business for yourself. The DuBrie Engine is well and widely known. We possess hundreds of testimonial letters from satisfied users and agents. We will give a live man a fine opportunity for himself and help him start a local business going. If you belong to the RISING CLASS of people you will quickly investigate how our firm is daily putting responsible men in business for themselves. Our literature is free and we will be pleased to have you address our AGENCY DEPARTMENT for complete information.

DuBrie Motor Company

137 Beaubien Street **Detroit, Michigan, U. S. A.**

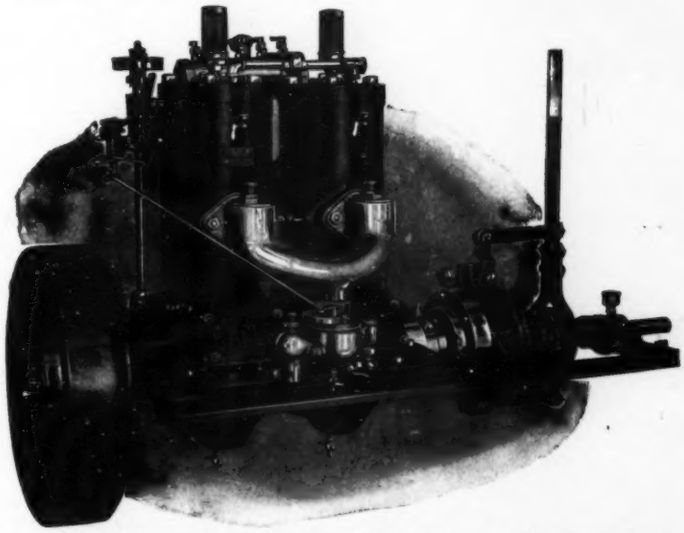
The MOTOR BOAT
Every Thursday.
ONE PENNY.
Published by:
TEMPLE PRESS Ltd.
7-15, Rosebery Ave.,
LONDON, E.C., Eng.
DEALS exhaustively with every phase of the Sport and Industry, providing matter of interest and instruction to present and prospective owners of power craft, be they lovers of the stream, lake, tideway, or the open sea. It is profusely illustrated by working drawings in the technical section, and all important racing events are illustrated by photographs and sketches. There is no better journal for keeping one well informed on ALL questions pertaining to power craft. Its scope is unlimited—Advertisers in its pages receive enquiries and orders from all parts of the world.
SUBSCRIPTION—"THE MOTOR BOAT" will be mailed regularly at the following rates:
12 mns. 6 mns. 3 mns.
United Kingdom 6s. 6d. 3s. 3d. 1s. 8d.
Other Countries 8s. 8d. 4s. 4d. 2s. 2d.
REMITTANCES.—Postal Orders, Cheques, etc., should be crossed and made payable to "Temple Press Limited."
MOTOR BOAT
The only British Journal devoted exclusively to Motor Boat Topics.

EAGLE MARINE ENGINES
DURABLE SIMPLE EFFICIENT

1911 Eagle Engines

The Engine You Have Been Waiting For
The BEST From Every Point of View

Eagle Engines are the most highly developed engines so far as design, finish, workmanship and quality are concerned so far produced. They can be bought at prices that will amaze you.



A most complete nest of Heavy Duty Eagles with a 12-year reputation for Efficiency—our catalog, which is free, tells you all about them.

CONDITIONS HAVE CHANGED

Until the **Eagle Company** brought out its **present extensive line of marine engines and inaugurated its new selling policy,** a prospective purchaser of a two-cycle engine was confronted with **several serious conditions.**

If he desired to purchase a **reliable** and **trustworthy** engine with **a high grade equipment,** he was **compelled to pay a high price to obtain it.** On the other hand, if he could not **spare the money** for a high grade engine he bought **one of the kind that was then sold with nothing to recommend it but low price.** The result was at **the end of his first season he had nothing.**

TODAY conditions are **DIFFERENT.** If you want the **best Engine made,** the **best running,** the **best finished,** with the **best equipment,** you get it in an **"Eagle" and at a competitive price.**

Eagle engines have the finest enameled finish on **the outside** and the best mechanical construction on **the inside** of any two-cycle engine made today. They develop more horse power for the stroke and bore of any two-cycle engine made today (which we proved under the same operating conditions).

Eagle engines are made in **fifteen** sizes in **semi-speed** and **heavy duty** models. The range of sizes is **so complete** that **every requirement** is provided for where it is possible or desirable to use this type of engine.

No one interested in marine engines can afford to overlook our offerings in this line of manufacture. For years we have been building the best two-cycle engine made and demanding a high price for it. Our new facilities and equipment enable us to continue to supply the best two-cycle engine made, **but we are now selling them to you at competitive prices,** and giving you **more** and **better equipment** than you **ever received** before or will receive today unless **you pay a large extra price.**

Take the time to request a copy of our catalogue. It's real, free for the asking, and contains a lot of information that will interest. Oh, yes, it's nicely printed; some say it is a work of art.

THE EAGLE CO., 98 Warren Street, NEWARK, N. J.

DISTRIBUTORS:

A. P. Homer, New England, 88 Broad Street, Boston, Mass.
Astoria Iron Works, Pier 4, Seattle, Washington
Bruns-Kimball Co., Inc., 134 Liberty Street, New York City
Barden Electric and Machinery Co., Houston, Texas
California Gas Engine and Motor Boat Co., San Francisco, Cal.
W. E. Gochenaur, 631 Arch Street, Philadelphia, Pa.
Bell Motor Co., Norfolk, Va.
306 South Hanover Street, Baltimore, Md.
Stauffer, Eshleman & Co., Ltd., New Orleans, La.

EAGLE MARINE ENGINES
DURABLE SIMPLE EFFICIENT

The Dawn in Motor

Combinations of manufacturing enterprises are of two kinds: first:—those formed to throttle competition, boost prices, control the output of products, and thus create enormous private fortunes; and second:—the spontaneous getting together of manufacturers of the same general product to enable them to conduct their business better and more economically; to increase their purchasing power; to reduce their executive and overhead expenses and selling costs; to concentrate the brains and ability of each upon the problem of the whole, and thereby give to the buying public a better and more standardized product at less cost.

The National Boat and Engine Company is of the latter kind. It is the leader in a great and rapidly growing American industry. It was created to meet the enormously increased demand for motor boats, which as a recreation and sport, is at present commanding greater public favor than any other means of locomotion for pleasure.

The strength of a concern is measured by the men in it. The officers of this company, active, practical men who have made the motor boat industry what it is today and, by their consolidation, open the way to greater development than has ever before been possible, are as follows:

Mr. W. J Reynolds, President; formerly President of the Racine Boat Manufacturing Company.

Mr. J. M. Truscott, Vice-President; formerly President of the Truscott Boat Manufacturing Company.

Mr. C. A. Williams, Secretary; Secretary of the Charles H. Fuller Company, Publicity Expert.

Hon. John Q. Ross, Treasurer; Lieutenant-Governor of the State of Michigan.

The Board of Directors is composed of these gentlemen and the officers of the various plants included in the National Boat and Engine Company.

The National Sales Organization

A typical example of what this company is doing to make it possible for everyone to own a motor boat and partake of the joys that life in the open brings, is seen in the establishment of the enormous selling agencies in all parts of the country where full lines of standardized boats can be purchased at new National prices. The great stores and show-rooms at New York and Chicago, with branches in all large cities, and agents wherever motor boats are used, bring to your door the pleasures and benefits of this wonderfully healthful sport.

# of a New Era Boat Building

An Old Business Made New

There are ten great Companies included in the National Company, covering a combined floor space of over three hundred thousand square feet, and having a capacity of five thousand boats of all kinds per year. But do not think because this new idea in motor boat building and selling is now applied to the industry, that the Companies which compose it are new also. They represent all that is stable, solid, sure and experienced in motor boat building, and the individual plants and Companies are, and always have been, the leaders in the motor boat world in their respective lines. Their boats have been known as the finest products of boat building experience, and NOW you can get the output of these great plants and builders, standardized and perfected to a higher degree than ever before.

We Cover the Entire Field of Motor Boat Building

We offer you anything and everything in the way of motor craft and small boats that can be desired—all built to one high standard, and sold under one broad guarantee. The Government has recognized the economy of our method of construction, and our superior facilities, and we are executing at the present time many Government contracts for light ships, tugs, light-house tenders, life-boats, etc.

We Offer Complete Service

We exhibit at our various show-rooms for inspection, trial and prompt delivery, a complete line of cruisers, launches, row-boats, dingeys, canoes, engines, and accessories. Here the man of moderate means can find a boat as low in price as $20, while the man of wealth can select a palatial yacht or high-powered speed boat.

National Boat & Engine Company

1210-1212 Michigan Avenue, Chicago

FACTORIES ARE IN:

West Mystic, Conn. Michigan City, Ind. Shell Lake, Wis.
Muskegon, Mich. St. Joseph, Mich. Lake Geneva, Wis.
Bay City, Mich. Kankakee, Ill. Fond du Lac, Wis. Ashland, Wis.

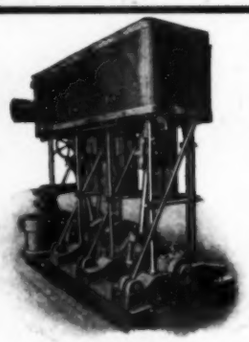
BRANCH STORES AND AGENCIES IN:

New York Rochester Philadelphia Jacksonville, Fla.
New Orleans Chicago Washington, D.C. Bridgeport, Conn.
Boston San Francisco Buffalo Detroit
St. Louis Baltimore Seattle, Wash. Pittsburg

NATIONAL BOAT & ENGINE CO., 1210-1212 Michigan Ave., Chicago, Ill.

Gentlemen: Send me please, without obligation on my part, detailed information concerning a ..... ft. ..... waters.
(State size and kind of boat interested in)
for service in .....
(State whether for inland lakes, gulf, sound, river, etc.)

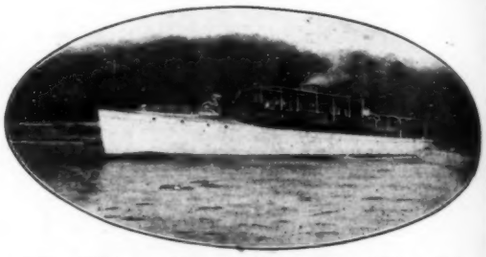
Name .....
Address .....
City ..... State .....



SEABURY STEAM ENGINES,
10 TO 3,000 H. P.

Gas Engine & Power Co.
and
Charles L. Seabury & Co.,
Consolidated

ENGINEERS,
DESIGNERS
AND BUILDERS



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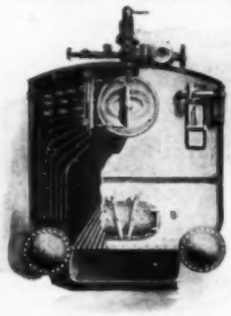

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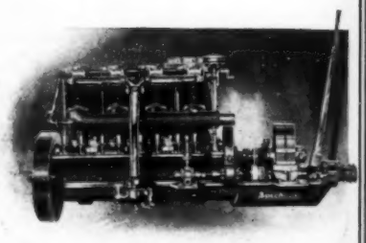

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Every drop of oil is *measured*—never too much, but always enough. The Detroit Force Feed Oiler is insurance against wasted oil and a damaged engine.

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Is the logical one for your motor boat

Why? you ask.

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Economy, for another point. Contrast a full season of sweet, smooth running obtainable with an Atwater Kent system from a set of ordinary dry cells, with the miserable performance of the vibrator coil which will run but a few weeks on the same amount of battery power.

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Insure a pleasant season, free from ignition worry, by changing now to the Atwater Kent. Send for interesting descriptive booklet and prices.

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42 to 50 North 6th Street, Philadelphia, Pa.

Don't Be The Hero Of That Touching Comedy:

"Towed Home: or He Wouldn't Buy A Buffalo"

When you start on a cruise are you *sure* your engine will bring you home again?

Wouldn't the *certainty*—the freedom from anxiety—to say nothing of the annoyance when an "accident" does happen increase your enjoyment 50 per cent.?

Of course it would. So you are really losing a lot of fun besides wasting money for repair bills, when you fail to install a BUFFALO, the engine that *never breaks down.* If you think this statement is too strong, *ask the man who runs one.*

BUFFALOS are built in 23 models of the regular, high-speed and heavy-duty types. There is a BUFFALO to power *any* play boat, work boat or speed boat.

GET THE BUFFALO BOOK. IT'S FREE

"The Engine of Constant Service"

BUFFALO GASOLENE MOTOR CO.

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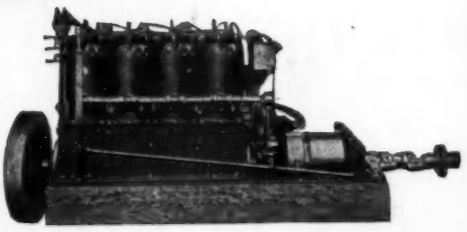
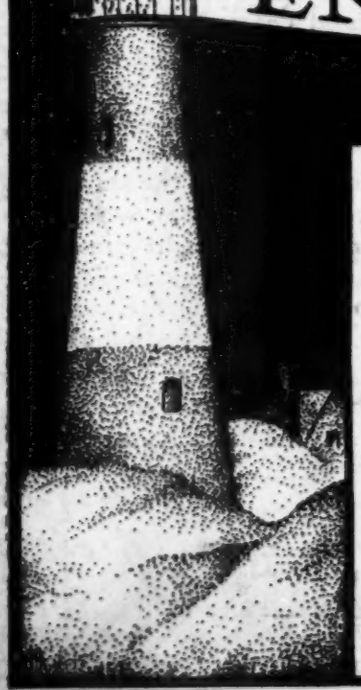
Your Protection and Safeguard

LAMB ENGINES





THEY are the beacon lights of motor boating. They represent, and are the perfect quality of marine engine construction.

They are solid, stable, built for hard usage—the kind of marine engine that the motor boatman needs, and always finds to be all that a high grade marine motor ought to be.

READ CAREFULLY THE LAMB ENGINE SPECIFICATIONS and then send for the Lamb Engine Catalogue.

CYLINDERS—Cast separately, water jackets fitted with hand holes, walls ground, medium duty and high speed, 5¼ in. bore, 6 in. stroke; heavy duty, 6⅛ in. stroke, 7 in. stroke.

CRANK CASE—Large hand-hole plates, end disk removable.

WATER CIRCULATION—Bronze, long-stroke plunger pump. Water piping has expansion joints. Water bypassed around cylinder head joint.

REVERSE CLUTCH—Planetary type. Direct cone drive ahead; for reverse gears in action, gears steel on bronze pinions; encased in oil; same speed astern as ahead. Only two adjustments. Control led to forward end of motor.

IGNITION—Jump spark; Splitdorf or Bosch Magneto, when specified; controls led to forward part of motor.

CYLINDER HEADS—Removable; valve caps polished brass.

CRANK-SHAFT—One-piece open hearth steel, milled, turned and ground; fly-wheel end tapered.

LUBRICATION—Positive mechanical oiler, driven by ratchet from cam-shaft; oil carried to each wearing part; centrifugal oil rings used on crank shaft.

PISTONS AND RINGS—Trunk pattern; 3 rings on medium duty type; 5 rings heavy duty type; ground.

INTAKE BRANCHES—Give a direct and easy flow of gas; fitted with hand-hole plates.

CARBURETER—Schebler; controls led to forward part of motor; hot-air intake.

VALVES AND VALVE MECHANISM—Both on one side. Thoroughly water-jacketed. Valve and stem forged from one piece. Lateral adjustment on push rod. Rod actuated by link and roller of hardened steel. Guides long and removable.

CONNECTING RODS—Annealed malleable iron H. cross-section. All connecting rods except on 12 H. P. are fitted with 4 bolts; each bolt fitted with 2 nuts and cotter pins.

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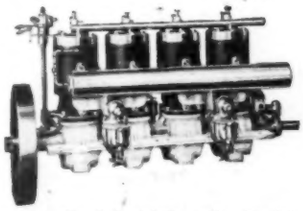
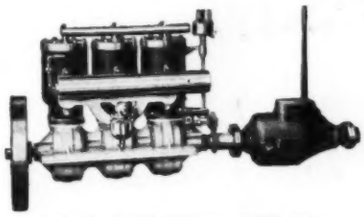


4-cyl. "Featherweight" with Special Exhaust Manifold. 40 h.p. Weight 250 lbs. Price $1050

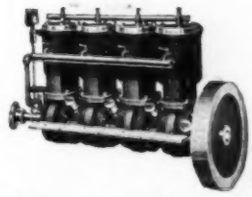


3-cyl. Type "C," 27 h. p. at 900 r.p.m. Weight 295 lbs.

Price, aluminum fittings..... $535
Price, iron fittings..... 475
2-cyl. "C," 18-20 h.p..... 300
4-cyl. "C" 675

*Type "C" Engines 9 h.p. per cylinder at 900 r.p.m.

Light, high-speed engines for fast launches and semi-speed boats. Made in one to four cylinders.



4-cyl. Type "B," 24 30 h.p. Weight 420 lbs. Price complete $675

Type "B" Engines. Speeds 450 to 800 r.p.m. for launches and small cruisers. Made in one to four cylinders, rated 6 to 30 h.p.

2-cyl. 12-15 h.p..... $300
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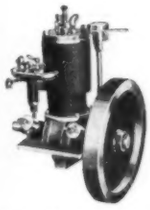
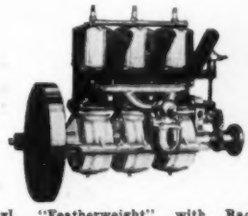


Type "A," 3-5 h.p. Weight 80 lbs. Price complete $85.00

The Elbridge Name Plate on an engine stands for the best mechanical construction, the best materials, the greatest power for weight and bulk, the greatest fuel economy and a power plant exactly suited to the hull in which you install it.

Give us the size, general outlines and purpose for which you wish to use your boat. We will tell you the type of motor best suited to your needs.

Our 1911 catalog is full of information valuable to all motor boat owners. Send for it.



3-cyl. "Featherweight" with Racing Stacks. More than 30 h.p. guaranteed. Weight 200 lbs. $750

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By our method of manufacture we enable you to make a big cut in your cost.

They will do the same work, under like conditions, as those you now use.

Made in sizes up to 2½ inch shaft.

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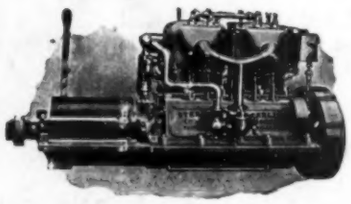
"EVERYTHING THAT COULD BE DESIRED"



30-45 H. P.—THE ENGINE

This shows the semi-heavy duty and speed type of engine, built also in 18-25 H. P. and 25-40 H. P., four cylinders. This same type is built in six cylinders 35-55 H. P., and 45-65 H. P., and in eight cylinders 100 H. P. These engines make very desirable power for small cruisers—launches—runabouts and speed boats.

"ERMINE"—THE BOAT

THE COOKE & COBB CO.
— WHOLESALE —
Manufacturing Stationers,
[illegible] STURGES STREET

Brooklyn, N. Y., April 10, 1911.

Sterling Engine Co.,
Buffalo, N. Y.

Gentlemen:-

I am sending you herewith a photograph of the boat "Ermine" which is equipped with a 30-45 HP., Model B Sterling engine, installed in May 1910. Other engines have been employed in this hull, but I am fail to state that your engine is everything that could be desired. During 1910, from May 20 to October 10, she made 3960 miles according to log, practically in the waters from Bay Head, N. J. to Cape May, and we are not only glad that we have a Sterling engine but proud of same. There has never been in the writer's memory the slightest hitch in the engine.

The "Ermine" is making an average speed safely and regularly, substantially eleven miles an hour.

The photograph herewith is the best obtainable in these parts. In fact it is hard work to get a good photograph of the boat, as photograph galleries are not in the proper place to get such results.

The "Ermine" is 46'10" over all, 9' beam.

Hoping this photograph may be of service to you as a record to you among the many in which your Sterling engines are now installed, I am

Very truly yours,

THE letter reproduced is just one of the many which we receive. Any Sterling owner will tell you practically the same thing. Sterling engines are bound to give good and satisfactory service because they are built *for marine use only.* We know the conditions to be met, and we know how to meet the conditions. The most advanced methods and the latest improvements are embodied in Sterling construction.

100 H.P.—A NEW HEAVY DUTY SIZE—100 H.P.

We have now ready for the trade a new heavy-duty 100 H. P. engine having eight cylinders with bore of 6½ inch by 8 inch stroke, developing its rated power at a speed of 400 R. P. M. This, together with the 8-10-12-15-20-40-60 H. P. heavy-duty engines, gives a range of sizes suitable for any cruiser or commercial boat within the limits of power of these engines.

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